Finite Element Methods: Superconvergence, Post-processing, And A Posteriori Estimates

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SUPERCONVERGENCE AND A POSTERIORI ERROR ESTIMATES OF NONCONFORMING FEM FOR BOUNDARY CONTROL GOVERNED BY STOKES EQUATIONS

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In this paper, the superconvergence results of nonconforming finite element method are derived for a class of mixture boundary control problems governed by Stokes equations. We derive superconvergence results for both the control and the state approximations. Base on superconvergence results, we obtain asymptotically exact a posteriori error estimates. Moreover, numerical examples demonstrating our theoretical results are provided in this paper.

Keywords: boundary control; nonconforming FEM; superconvergence.

1. Introduction

Finite element approximation of optimal control problems plays a very important role in the numerical methods for these problems. The literature in this aspect is huge. The error estimates of finite element approximation were established for the distributed optimal control of problems governed by some state equations; see, for example, Ref. 6, Ref. 11, Ref. 19, Ref. 20, Ref. 21 and Ref. 12. As one of important kinds of optimal control problems, the boundary control problem is widely used in scientific and engineering computing. The error estimates have been provided for boundary control problems, see Ref. 7, Ref. 10, Ref. 17 and Ref. 18. In recent years, the superconvergence property of some distributed optimal control problems including the distributed optimal control problem governed by Stokes equations have been investigated, see, for example, Ref. 5, Ref. 13, Ref. 15, Ref. 24. Although superconvergence property of finite element approximation is widely used in numerical simulations, it is not yet been utilized in nonconforming finite element method of boundary control problems.

Finite Element Methods: Superconvergence, Post-Processing, and A Posterior Estimates - CRC Press Book.Finite Element Methods: Superconvergence, Post-Processing, and A Posterior Estimates. Front Cover. Michel Krizek, Pekka Neittaanmaki, Rolf Stenberg.Superconvergence, Post-Processing, and A Posterior Estimates reviewed papers focusing on superconvergence phenomena in the finite element method.Buy Finite Element Methods: Superconvergence, Post-Processing, and A Posterior Estimates (Lecture Notes in Pure and Applied Mathematics) on Amazon .com.Editorial Reviews. Review. " has the potential of becoming one of the cornerstones in Finite Element Methods: Superconvergence, Post-Processing, and A Posterior Estimates: (Lecture Notes in Pure and Applied Mathematics) - Kindle.American options variational inequality finite element methods optimal and superconvergent estimates interpolation postprocessing a posteriori.bjornhalldal.com: Finite Element Methods: Superconvergence, Post-Processing, and A Posterior Estimates (Lecture Notes in Pure and Applied Mathematics).Post-processing, And A Posteriori Estimates by M Krizek; P Neittaanmaki; R Stenberg ; Inc NetLibrary. Superconvergence in Finite Element Methods and.[PUB] Edition Las Finite Element Methods Superconvergence Post Processing And A Posteriori Estimates - Read Now. FINITE ELEMENT.finite element solution and its postprocessing. Superconvergence, anisotropic mesh, recovery type error estimates, post [31] Ningning Yan and Aihui Zhou, Gradient recovery type a posteriori error estimates for finite.Due to its efficiency and robustness, the ZZ postprocessing has been widely used A posteriori error estimates of finite element approximation were established for the .. The superconvergence analysis and a posteriori error estimates to be.Keywords. Quasi-linear elliptic problems. Finite element method. Superconvergence. Postprocessing-based a posteriori error estimates.() Superconvergence of immersed finite element methods for interface problems. () Superconvergent patch recovery and a posteriori error estimation . () Flexible patch post-processing recovery strategies for solution.() Postprocessing Mixed Finite Element Methods For Solving CahnHilliard () Superconvergence of elliptic reconstructions of finite element solutions of () Element-wisea posteriori estimates based on hierarchical bases for.Superconvergence of mixed finite element methods for optimal control problems results are obtained by virtue of an interpolation postprocessing technique. Y . Chen and W. B. Liu, Posteriori error estimates for mixed finite elements of a.Keywords: finite element method, superconvergence error estimates. MSC . error expansion, extrapolation and postprocessing. 2) Since .. In Finite element methods: superconvergence, post-processing and a posteriori estimates (M.Mixed finite element methods. Superconvergence, postprocessing and. a- posteriori estimates. Rolf Stenberg. Helsinki University of Technology. Carlo Lovadina.Buy a discounted PDF of Finite Element Methods online from Australia's leading online Superconvergence, Post-Processing, and A Posterior Estimates.a posteriori error estimates have been discussed in e.g., [8, 18, 2, 14, 17]. For the mixed finite finite element methods, discontinuous functions,

postprocessing.