Residual a Posteriori Error Estimate of a New Two-Level Method for Steady Navier-Stokes Equations

Chunfeng Ren, Yichen Ma

College of Science, X'an Jiaotong University, Xi'an, 710049, China

摘要   Residual-based a posteriori error estimate for conforming finite element solutions of incompressible Navier-Stokes equations, which is computed with a new two-level method that is different from Volker John, is derived. A posteriori error estimate contains additional terms in comparison to the estimate for the solution obtained by the standard finite element method. The importance of the additional terms in the error estimates is investigated by studying their asymptotic behavior. For optimal scaled meshes, these bounds are not of higher order than the convergence of discrete solution. The two-level method aims to solve the nonlinear problem on a coarse grid with less computational work, then to solve the linear problem on a fine grid, which is superior to the usual finite element method solving a similar nonlinear problem on the fine grid.

关键词   Finite element method   Navier-Stokes equations   residual-based a posteriori error estimate   two-level method

分类号

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