A posteriori error estimators based on Ritz projection for the augmented mixed FEM in plane linear elasticity

Tomás P. Barrios, Edwin M. Behrens
Facultad de Ingeniería, Universidad Católica de la Santísima Concepción, Chile
tomas@ucsc.cl, ebehrens@ucsc.cl

María González
Dpto. de Matemáticas, Universidad de A Coruña
mgtaboad@udc.es

Resumen

We considered the augmented mixed finite element method for the linear elasticity problem, in the cases of homogeneous and nonhomogeneous Dirichlet boundary conditions, and deduced an unusual a posteriori error estimator based on a Ritz projection of the error. We proof efficiency and reliability of the estimator for homogeneous Dirichlet boundary conditions. However, the presence of the nonhomogeneous Dirichlet boundary conditions implies that these estimators contains a non-local term, so we propose modifications of it that lead to reliable estimators that are locally efficient except in those elements with a node or a side on the boundary. Numerical experiments illustrating the performance of the a posteriori error estimators are provided.

Sección en el CEDYA 2011: AN

Bibliography

