An implicit–explicit residual error estimator for the coupling of dual-mixed finite elements and boundary elements in elastostatics

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Abstract

We consider the coupling of dual-mixed finite elements and boundary elements to solve a mixed Dirichlet–Neumann problem of plane elasticity. We derive an *a-posteriori* error estimate that is based on the solution of local Dirichlet problems and on a residual term defined on the coupling interface. The general error estimate does not make use of any special finite element or boundary element spaces. Here the residual term is given in a negative order Sobolev norm. In practical applications, where a certain boundary element subspace is used, this norm can be estimated by weighted local L^2-norms.