

A p -adaptive algorithm for the BEM with the hypersingular operator on the plane screen

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Abstract

We propose a p -adaptive algorithm for the Galerkin method solving the hypersingular integral operator of the Laplacian on the plane screen. The error indicators/estimators are based on projections of the actual error onto local subspaces. These subspaces are defined by decompositions of specially designed enriched ansatz spaces. Our algorithm uses different strategies for the refinement and the stopping criterion. The error estimator that stops the algorithm is based on an overlapping decomposition of an ansatz space that is defined by mesh refinement. The error indicators that steer the p -refinement are computed via an almost direct decomposition of an enriched ansatz space that uses the same mesh but higher polynomial degrees. Numerical results support the efficiency of our algorithm.