ADAPTIVE BOUNDARY ELEMENT METHODS FOR REGULARIZED COMBINED FIELD INTEGRAL EQUATIONS

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ABSTRACT. While exterior boundary value problems for the Helmholtz equation are uniquely solvable, this is not the case for associated standard boundary integral equations if the wave number is related to interior resonances. On smooth boundaries, so-called combined field integral equations are not affected. In [?, ?], regularized versions of the latter, which are coercive on general Lipschitz domains, have been proposed.

In this talk, we present *a posteriori* computable residual error estimators for the boundary element discretization of these regularized combined field integral equations. If used to steer local refinement of the underlying meshes, we show that these estimators converge linearly at optimal algebraic rate.

Keywords: exterior Helmholtz problem, boundary element method, *a posteriori* error estimate, adaptive algorithm, optimal convergence

Mathematics Subject Classifications (2010): 35J05, 65N12, 65N15, 65N38, 65N50

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