

# FE-BE Coupling for Electromagnetic Interface Problems in 3D.

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## ABSTRACT

Electro-magnetic interface problems in 3D (eddy current, time harmonic scattering) are considered in a variational form where the exterior problem is substituted by boundary integral equations on the surface of the scatterer. This coupled formulation is discretized with finite elements (Nédélec edge elements) in the scatterer and with boundary elements (Raviart-Thomas elements) on its surface. We present a posteriori error estimates of hierarchical and residual type together with adaptive refinement algorithms. Both  $h$ - and  $p$ -versions are analyzed, where in the first case higher accuracy is achieved by reducing the mesh size  $h$ , and in the second case by increasing the polynomial degree  $p$ . Numerical experiments support our theoretical results.