

# AN ADAPTIVE FINITE ELEMENT / BOUNDARY ELEMENT COUPLING METHOD FOR ELECTROMAGNETIC PROBLEMS

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We present an *hp*-version of the finite element / boundary element coupling method to solve time-harmonic scattering problems and eddy current problems in  $\mathbb{R}^3$ . We use  $\mathbf{H}(\text{mborot}, \Omega)$ -conforming vector-valued polynomials to approximate the electric field in the conductor  $\Omega$  and  $\mathbf{H}(\text{div}_\Gamma, \Gamma)$ -conforming polynomials on the boundary  $\Gamma$  of  $\Omega$  to approximate the twisted tangential trace of the magnetic field. We present both a priori and a posteriori error estimates together with an adaptive algorithm to compute the fem/bem coupling solution on suitably refined meshes. We present numerical results.

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