

An absolutely stable hp -HDG method for the time-harmonic Maxwell equations with high wave number

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We present and analyze a hybridizable discontinuous Galerkin (HDG) method for the time-harmonic Maxwell equations. The divergence-free condition is enforced on the electric field, then a Lagrange multiplier is introduced, and the problem becomes the solution of a mixed curl-curl formulation of the Maxwell's problem. The method is shown to be an absolutely stable HDG method for the indefinite time-harmonic Maxwell equations with high wave number. By exploiting the duality argument, the dependence of convergence of the HDG method on the wave number κ , the mesh size h and the polynomial order p is obtained. Numerical results are given to verify the theoretical analysis.