Virtual Elements for electromagnetic problems

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ABSTRACT

We present and analyse a family of approximations of magneto-static problems based on the Virtual Element approach ([1], [3], [4]) in two and three dimensions. The magnetic field **H** is discretized as an *edge* Virtual Element, and the (given) current density is interpolated as a *face* Virtual Element. The constitutive equation is imposed strongly, and the condition div**B** = 0 on the magnetic induction is imposed by means of a Lagrange multiplier following the formulation of Kikuchi (see [2]).

We show optimal convergence rates under mild assumptions on the decomposition, and we present some numerical tests.

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