Functional a posteriori error estimates for Maxwell equations

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Finite element methods for numerically solving the Maxwell equations are still under active development. First a posteriori error estimates derived in this context are quite recent (Beck *et al.* 1999). These estimates are residual based and contain unknown, mesh dependent constants, thus in practice they can serve only as error indicators. This situation creates a need for practically computable, guranteed a posteriori error estimates.

In this talk, we present functional a posteriori error estimates for two simplifications of the Maxwell equations, eddy-current and time-harmonic cases. These estimates are applicable to any admissible approximation of the solution, and they are parctically computable. Estimate derived in the eddy-current case is numerically tested in two different cases.

The presented estimates have not been derived in this contex before. They perform well in numerical test, both in error estimation and in adaptive mesh refinement.