

ADAPTIVE FINITE ELEMENTS FOR MAXWELL'S EIGENVALUE PROBLEM

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We review a posteriori error analysis and adaptive schemes for the approximation of eigenvalue problems arising from partial differential equations. Our ultimate goal is the design of adaptive schemes for the approximation of the eigenmodes associated with Maxwell's equations. It is well known that the Maxwell eigenvalue problem can be analyzed with the help of suitable mixed formulations. Taking advantage of this remark, we can prove the convergence with optimal rate for the edge finite element approximation of the Maxwell eigenvalue problem. In three dimensions, the result is not a trivial extension of the analysis presented in [1]. Preliminary results on a posteriori estimates have been obtained in [3, 4]. Particular attention is paid to the case of multiple eigenvalues and clusters of eigenvalues.

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