

ON THE COMPUTATION OF MAXWELL'S EIGENVALUES WITH NODAL ELEMENTS

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ABSTRACT

We consider the finite element approximation of the eigenvalues and eigenfunctions of the resonant cavity associated with Maxwell's equation.

It is well known that with a standard Galerkin formulation the optimal convergence is achieved when edge elements are used [4].

Recent results on the approximation of the spectrum associated with finite element least squares formulations [3, 1, 2] can be extended to the Maxwell eigenvalue problem. This is straightforward in two dimensions and more elaborate in three dimensions.

One might wonder if such results are also valid when nodal elements are used for the approximation of the electric field.

The aim of this talk is to give an answer to this question and to compare the numerical results with other schemes involving nodal elements such as [5].

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