A posteriori error estimates for a finite element method to solve structural-acoustic vibration problems

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Abstract

This work deals with the elastoacoustic vibration problems, which consist of determining the vibration modes of an elastic solid containing a compressible fluid [9]. We present an *a posteriori* error estimator for a finite element method free of spurious or circulation nonzero frequency modes (see [7, 5]). The estimator is shown to be equivalent, up to higher order terms, to the approximate eigenfunction error, measured in a useful norm. Moreover, the equivalence constants are independent of the corresponding eigenvalue, the physical parameters, and the mesh size. This *a posteriori* error estimator yields global upper and local lower bounds for the error and, thus, it may be used to design adaptive algorithms.

This work is in collaboration with Anahí Dello Russo, Claudio Padra and Rodolfo Rodríguez.

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