

A NONCONFORMING FINITE ELEMENT METHOD FOR AN ACOUSTIC FLUID-STRUCTURE INTERACTION PROBLEM

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In this talk we discuss a nonconforming finite element approximation of the vibration modes of an acoustic fluid-structure interaction. Displacement variables are used for both the fluid and the solid. The numerical scheme is based on the irrotational fluid displacement formulation; hence it is free of spurious eigenmodes. The method uses weakly continuous P_1 vector fields for the fluid and classical piecewise linear elements for the solid; and it satisfies optimal order error estimates on properly graded meshes. The theoretical results are confirmed by numerical experiments. This is joint work with Susanne C. Brenner, Ayçil Çesmelioglu and Li-yeng Sung.