AN A PRIORI ERROR ANALYSIS FOR A STEKLOV EIGENVALUE PROBLEM USING A HYBRID HIGH-ORDER METHOD

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Abstract. In this talk we discuss the approximation of the spectrum of the Steklov eigenvalue problem, when using the well known Hybrid High-Order (HHO) method. The analysis developed here, adapt ideas described in a previous HHO work, that deals with the classical Laplacian eigenvalue problem. As expected, we are able to eliminate the volume unknowns, by introducing a suitable discrete operator. This allows us to numerically solve on the skeleton of the mesh, reducing the computational cost. The a priori error analysis lets us to prove optimal convergence rates for the eigenvalues and the eigenfunctions, when the latter are smooth enough. Numerical examples, with smooth and non-smooth eigenfunctions, verify our theoretical findings.

Keywords: Steklov eigenvalue problem, Hybrid High-Order method, a priori error analysis, polytopal meshes.

Mathematics Subject Classifications (2010): 62N25, 65N30, 74S99

Acknowlegdments: First author has been partially support by ANID (Chile) through FONDECYT Project No. 1200051.

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