

ROBUST LEAST-SQUARES METHODS FOR THE HELMHOLTZ EQUATION

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ABSTRACT

Inspired by [1], we present a well-posed ultra-weak first order system formulation of the Helmholtz equation with possibly inhomogeneous mixed Dirichlet, Neumann and Robin boundary conditions. By employing the optimal test-norm, least-squares discretizations yield the best approximation of the solution in the L_2 -norm from the trial space. We present numerical results for the corresponding ‘practical’ method, as well as for an “ LL^* ”-method.

REFERENCES

- [1] L. Demkowicz, J. Gopalakrishnan, I. Muga, and J. Zitelli. Wavenumber explicit analysis of a DPG method for the multidimensional Helmholtz equation. *Comput. Methods Appl. Mech. Engrg.*, 213/216:126–138, 2012.

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