NUMERICAL ANALYSIS AND BENCHMARKING OF A SOMMERFELD-TYPE NON-REFLECTING BOUNDARY CONDITION FOR THE WAVE EQUATION IN MIXED FORM

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In this paper we investigate a non-reflecting boundary condition (NRBC) of Sommerfeld type for the wave equation in mixed form in time domain. we apply the NRBC to the wave equation in mixed form in time domain for three variational forms of the equation. Special emphasis is put in the spaces where the solution belongs, in particular the regularity required on the boundary.

Then stabilized finite element methods are described. Stability and convergence analysis of stabilized finite element formulations including the NRBC are presented. Additionally, numerical convergence test are evaluated for various polynomial interpolations , stabilization methods and variational forms.

Finally, several benchmark problems are solved to determine the accuracy of the NRBC in 2D and 3D.

REFERENCES

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