A REGULARIZATION METHOD FOR THE NUMERICAL SOLUTION OF THE CAUCHY PROBLEM FOR THE HELMHOLTZ EQUATION

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Abstract. In this paper, the iterative algorithm proposed by Kozlov et al. [12] for obtaining approximate solutions to the ill-posed Cauchy problem for the Helmholtz equation is analysed. The technique is then numerically implemented using the boundary element method (BEM). The numerical results confirm that the iterative BEM produces a convergent and stable numerical solution with respect to increasing the number of boundary elements and decreasing the amount of noise added into the input data. An efficient stopping regularising criterion is also proposed.

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