

Numerical solution to inverse source problems for hyperbolic equation

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Abstract: In this work, we consider two inverse source problems with respect to processes described by boundary value problems of hyperbolic type. In particular, these classes of problems arise in the study of boundary value problems with nonlocal (integral) boundary conditions. The specific character of the considered classes of inverse problems is that the identifiable coefficients belong to the right-hand side, and they depend only on the time or only on the space. This specific character allows reducing the problem to specially built Cauchy problems with respect to a system of ordinary differential equations using the method of lines [1–3]. Thus, we do not use any iterative procedures in the approach proposed in the work. Some of the results of the carried out numerical experiments are given. The obtained results show the efficiency of the proposed approach.

Keywords: inverse problem, method of lines, hyperbolic equation, space and time dependent

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