

An Efficient Method for Inverse Source Problems in A Hyperbolic Equation

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We shall derive and propose an efficient algorithm for identifying the source strength in a hyperbolic system from interior measurements. The stability of the inverse problem is first established, and then the method for numerical reconstruction is mainly studied. The ill-posed inverse source problem is formulated into an output least-squares nonlinear minimization with Tikhonov regularization. The proposed algorithm for solving the nonlinear minimization system is iterative, and computationally very easy and efficient: the minimizer at each iteration has explicit solution. Numerical experiments are provided to demonstrate the robustness and efficiency of the algorithm.

This is a joint work with Daijun Jiang (Central China Normal University, Wuhan) and Yikan Liu (The University of Tokyo).

Key words: inverse source problem, hyperbolic equation, stability, explicit solution