THE METHOD OF CHARACTERISTICS IN AN IDENTIFICATION PROBLEM

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We consider the problem of identifying the parameters of a dynamic system from a noisy history of measuring the phase trajectory. We propose a new approach to the solution based on the construction of an auxiliary optimal control problem such that its extremals approximate the measurement history with a given accuracy. Using the solutions of the corresponding characteristic system, we obtain estimates for the residual, which is the difference between the coordinates of the extremals and the measurements of the phase trajectory. An estimate for the result of identifying the parameters of the dynamic system is obtained. An illustrative numerical example is given.

Keywords: identification, residual functional, Hamilton–Jacobi–Bellman equation, characteristic system.

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