RESEARCH OF OBJECTIVE FUNCTION IN PARAMETRIC IDENTIFICATION TASKS FOR INTERVAL DIFFERENCE OPERATOR WITH REQUIRED ACCURACY

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Abstract: *The paper presents the problems of parametric identification of nonlinear difference operator based on interval data. It is shoed that, formally, this problem belongs to the task of finding at least of one solution of interval system of nonlinear algebraic equations. It is proposed and justified the use of the methods of random search with a nonlinear discrete criterion function for solving this task. The properties of the function are researched in this paper.*

Keywords: *modeling under specified accuracy, identification parametric methods, interval difference operator, methods of random search.*

In this article the problem of identification of interval linear difference operator has been researched. This problem is shown as a task of solving of nonlinear algebraic equations interval system. Computational procedure of random search to a specified interval system of nonlinear algebraic equations is assessed and shown that it is going in direction of solving optimization problems. Properties of criteria function optimization are investigated and new scientific and practical results are obtained. First of all the problem of parametric identification of nonlinear interval difference operator with the required accuracy within the error observation in the form of numerical optimization represented by the target function that fully justifies the use of existing numerical random search parameters difference operator was formulated.

Investigated parameter identification problem for nonlinear difference operator of the interval required accuracy properties are set of criteria functions, namely: it is not unimodal; quality criteria function variable in the global minimum becomes zero, its value varies only slightly with little distance from the area of solutions. Established properties together make it possible to improve the parameter identification algorithms for nonlinear interval difference operator in the direction of reducing the computational complexity and improving convergence.

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