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AN APPROACH TO THE PROBLEM SOLVING OF SENSITIVITY DETERMINING OF ELECTRONIC CIRCUITRY

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ABSTRACT

This article focuses on one of the pressing issues related to the solution of the problem of the electronic device sensitivity to minor changes in the parameters of its elements. The paper gives a general formulation of the mathematical problem, resulting from simulation of transient processes occurring in the electronic circuit when exposed to external factors and changing parameters of the elements that make up the scheme.

A new approach to solving this problem, based on the numerical solution of two problems, is being offered: the first one is considered when the parameters of circuit elements remain unchanged, and the second - when the change of these parameters occurs. For the convenience of numerical implementation of the algorithm for the proposed approach to the problem solution, all of the parameters are considered dimensionless variables.

As an example of the solution the problem is set, an electronic circuit is considered, for which testing of the approach proposed here to solve the problem has been conducted. Various options for changing the parameters of circuit elements are considered. The numerical experiment has been conducted. The results of solving the problem are given in the form of tables and graphs.

To evaluate the sensitivity of the electronic circuit to the change in the parameters of its elements a relative difference between these two solutions has been adopted.

KEYWORDS: Electronic Circuit, Amplifiers, Numerical Experiment