EXPLORING OF CHARACTERISTICS OF PRECISION AND SPEED OF MODELING METHODS OF INFOCOMMUNICATION SIGNALS IN TIME DOMAIN

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Article reflects results of exploring characteristics of precision and speed modeling methods of infocommunication signals in time domain in in form of comparative analysis of known methods. Speed and precision represent like main characteristics of information signal and its distortion.

The current state of society is characterized by the rapid development of the field of Infocommunications. The main tool for designing infocommunication systems is mathematical modeling, the most important component of which is the modeling of signal distortion. The solution of the problem depends on the correct choice of the signal modeling method which is performed on the basis of a comparative analysis of the characteristics of accuracy and speed of known methods which determines the relevance of the research work.

The aim of the research is a comparative assessment of the characteristics of accuracy and speed of the known methods of modeling of infocommunication signals in the time domain.

Among the tasks of the research work the most important is the development of a program for assessing the characteristics of accuracy and speed of methods for modeling signal distortion based on the developed mathematical models of reactions of infocommunication systems and estimates of accuracy and speed, and a comparative analysis of methods for mathematical description of signals.

Modeling significantly intensifies the processes of analysis and synthesis; solves problems often impossible by other methods; repeatedly reduces the material and time costs of creating complex systems and devices while improving their quality.

At least the simulation of distortion of information and communication signal it is necessary to consider aspects such as description information and communication system signal, for example in chastotno-time domain or in the complex plane, the corresponding description parts of the system of Infocommunications.

At the same time, structural and circuit modeling are distinguished, performed, respectively, at the levels of structural (functional) and schematic diagrams.

Structural and technical modeling is used at the initial stages of design and development (research work, technical specifications, conceptual and technical projects). Its results mainly determine the structure and the main parameters of the quality of the created equipment.

The most important component of structural and technical modeling of infocommunication systems is the development of reasonable requirements for the frequency and time characteristics of individual functional units and the system as a whole.

The development performed by the modeling of linear distortions, using as patterns of blocks (channels) of the linear links.

In the course of this research work, a comparative analysis was carried out among such modeling methods as the method of solving differential equations, the method of difference recurrence relations, the method of the Duhamel integral, the method of Fourier series, the method of Fourier transforms and their varieties, the operational method and the universal method.

The correct choice of the modeling method is a responsible stage, which largely determines the final result. The choice is made on the basis of a comparative analysis of the characteristics of the accuracy and speed of known modeling methods suitable for a particular type of project.

At this stage of project modeling of infocommunication signal and its distortions development of the program of estimation of characteristics of accuracy and speed of methods of modeling of distortions of signals in time area including development of the scheme of the program-cover and program-procedures can essentially facilitate the choice in favor of this or that method that helps to solve a set of the scientific problems connected with the choice of methods and the equipment for design.

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