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SEARCH AND ANALYSIS OF THE NECESSARY PARAMETERS FOR THE DESIGN OF THE ORBITAL CONSTELLATION

Abstract

The design of complex technical systems (which is a space system) always faces a large number of interdependencies that complicate the design process. The purpose of this work is to begin to unravel the tangle of these functional dependencies, to identify the principles by which it is possible to do this in strict accordance with mathematical laws, as well as to prepare material for drawing up a logical scheme according to which it will be possible to automate the design process of the same type of satellite systems from the moment the initial data is received until the design documentation is ready, according to which the production of spacecraft can be started. This report continues the previous research on the system engineering approach to semi-automatic design of satellite systems. By the example of the development of a low-orbit addition to the GLONASS system and other GNSS, the decomposition of various design directions to design parameters was carried out. The interdependencies of a large number of design parameters among themselves are shown. These functional dependencies are divided into categories, which in the future will form the basis of the logic of the computer-aided design algorithm of the same type of satellite systems.