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**SYSTEM APPROACH TO THE ORGANIZATION OF INFORMATION SUPPORT
FOR A LAUNCH VEHICLE'S ACTIVE CONTROL SYSTEM DRIVEN BY THE
CURRENT OPERATING CONDITIONS**

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The goal of this paper is to develop elements of a simulation algorithm for determining the controlled dynamic parameters of the sustainer stages of launch vehicles (LVs) equipped with an active control system (ACS). In this study, methods of system analysis and computational rocket dynamics were used. The paper proposes a system approach to the organization of LV ACS information support with account for specified limiting values of the controlled dynamic parameters: the pitch rate, the velocity pressure, and the angle of attack. In flight, the LV ACS uses information on these parameters to suppress bending deformations of the LV structure and form a trajectory close to the energy-optimal one. The controlled dynamic parameters were brought to a simplified form, thus making it possible to take the data needed for their calculation from the inertial sensors of the LV control system. Simulation algorithm elements were developed to determine the dynamic parameters from the actual values of the center of mass motion parameters in the launch coordinate system, which can be obtained from their calculated values and the corresponding isochronous variations of their apparent values in the inertial coordinate system. The elements of the simulation algorithm for the determination of the LV sustainer stage dynamic parameters may be used in the development of ACS methodological support. The main advantage of the proposed system approach with account for specified limiting values of the controlled dynamic parameters is that it does not require any detailed simulation of dynamic loads on the LV sustainer stages and uses nothing but information on the dynamic parameters that characterize LV trajectory motion conditions.

Keywords: *apparent motion parameter, condition monitoring, dynamic parameter, launch vehicle, active control system, system approach, current operating conditions, terminal control.*

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