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MODELING AND ANALYZING OF THE SOFT-LANDING PHASE OF PARACHUTE-RETROROCKET SYSTEM

Abstract

In the field of spacecraft recovery technology, attenuation devices are generally necessary to cooperate with parachute system in order to make the payload and pilots soft-landing. The retrorocket is one of useful attenuation device which can decelerate the load immediately. In this paper the retrorocket working phase is analyzed based on simplified but logical model of parachute-load system. For given initial conditions of ignition, the velocity and altitude of module can be obtained at the end of retrorocket working phase. Given the altitude at the end of retrorocket working phase and in some other conditions, the initial ignition altitude of retrorocket can be solved. Some random and system deviations which may affect the performance of system must be considered. These deviations exert influences on initial ignition altitude directly. Then, applying computer-based simulation method and statistics toolbox, the random deviation of initial ignition altitude affected by obvious factors can be analyzed.