SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Technologies (5)

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ANALYSIS OF THE AVIONIC SYSTEM ACHITECTURE FOR FUTURE MANNED REUSABLE LAUNCH VEHICLE

Abstract

A future direction for reusable launch vehicle(RLV) is manned space activities. Manned RLV provides crew with living and working conditions, and escape provisions in case of emergency. It also needs to meet the requirements such as orbit maneuver, precision landing and ease of maintenance. Compared with space shuttle or expendable launch vehicle, a manned RLV will significantly reduce costs and promote the convenience in entering space and reentry. Supporting this goal is a avionic system with high functionality and reliability. This paper presents a avionic system architecture for future manned RLV and analyses its advantages based on the missions mentioned above. The integrated navigation, health management, environment control and escape system are introduced. The high reliability, resource efficiency, maintainability,low latency supported by the design of redundancy, communication network, fault detection are discussed.