

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

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VERIFICATION, VALIDATION AND ACCREDITATION OF THE SPACECRAFT VIRTUAL FLIGHT
EXPERIMENT

Abstract

Research on the reliability of simulation system is an important part of the system simulation theory and it has been becoming indispensable to spacecraft system. Because spacecraft flight is affected by various uncertain factors, for example, space aerodynamic, engines, controlling and environment and so on, and space flight number is generally relatively small, the spacecraft virtual flight experiment model for comprehensive and correct the credibility evaluation is particularly important. Its core is the Verification, Validation and Accreditation (VVA). Due to effects of the various uncertain factors, simulation modeling and model validation in virtual flight experiments are difficult. It leads to the requirement of simulation model VVA theory and method in virtual experiment of the full life cycle of the spacecraft. According to the requirement of engineering practice based on virtual flight simulation system for spacecraft, The principle of establishing simulation model are reasonably proposed. This paper also discussed the verification, validation and accreditation scheme while analyzes varied technology approaches and their feasibility of the static and dynamic consistency test, also summarized the methods of model testing and evaluating credibility model. This paper aims to regulate the entire development process of the verification, validation and accreditation model of virtual flight experiments of the spacecrafts, and explore the method of verification, validation and accreditation in the lack of a full system experiment. This study was based on engineering practice of spacecraft system simulation, so it is conducive to further carry out simulation model verification, validation and Accreditation and also to carry out research on engineering practice.