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Quality and Safety, always a beginning! (1)

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RESEARCH ON ORBITAL RESCUE SCHEME FOR HIGH-VALUE TARGETS IN SPACE

Abstract

With the development of space exploration, there are more and more high-value satellites / space stations / bases, and more and more space activities outside of the astronauts, whether it is the rescue needs of a failed satellite or astronauts' rapid identification and repair of targets outside the space station, orbital rescue of high-value space targets has become an indispensable new support system in the future. With the continuous reduction of space transportation costs in the world, space orbital rescue will also become possible.

This paper designs typical rescue scenarios and feasible rescue methods for high-value targets in space. The main research contents and innovative results of this article include: 1 Statistically analyze the space fault data that has been publicly reported, and initially design typical rescue scenarios and feasible rescue plans for future high-value targets in space; 2 Typical rescue scenarios include accidental failure of high-value satellites, space station maintenance involving astronauts, etc.; Feasibility rescue plan includes replacement of surface fault parts, plug-in placement of independent modules, etc.; Through the analysis of scene and rescue, the advantages and disadvantages of the scheme are compared. 3 According to the study of the scheme, the requirements for fast and intelligent identification of typical parts of several satellites such as solar sails, nozzles, and antennas are provided to provide support for related research.

This paper proposes typical rescue scenarios and feasible rescue methods for high-value targets in space, analyzes and compares the feasibility and advantages and disadvantages, and provides a system design reference for ensuring subsequent space exploration.