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IN-ORBIT FLIGHT STATE CONTROL METHOD OF LARGE HUMAN SPACECRAFT

Abstract

According to the in-orbit operation plan of the space station, the space station will realize unmanned and manned flight under various different configurations, and will carry out special in-orbit tasks such as orbit maintenance, rendezvous and docking, evacuation, propellant replenishment and extra-vehicular activity. It can be seen that the flight missions and flight status of the space station are complex, and the arrangement order of various special tasks in orbit are varied during the flight, compared with other spacecraft, the state control management of the space station combination has a wider management scope and is more difficult to carry out state control. In view of this background, the large spacecraft in-orbit flight state control method is proposed in this paper, in-orbit flight state control is comprehensively carried out from the aspects of flight state management scope, management process, technical state baseline determination, and special mission process optimization, so as to ensure that the in-orbit flight state of the space station is controllable at any time, ensure the smooth and reliable completion of the special in-orbit tasks, and ensure the safety of astronauts in orbit. After the in-orbit test of a large in-orbit spacecraft, this method can greatly improve the control efficiency of the in-orbit flight state of the spacecraft, make the in-orbit flight state of the large spacecraft controllable, and the special mission can be successfully implemented. The research results of this paper can provide an important reference for the subsequent in-orbit flight state control of large spacecraft with complex and changeable configurations and many special missions.