

Space Laboratory, Space Station and Space Exploration (2)
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RESEARCH ON ANTENNA SWITCHING STRATEGY FOR CABIN TRANSLOCATION BASED ON MANNED SPACE STATION

Abstract

The basic configuration for manned space station is composed of different cabins by means of multiple rendezvous and docking and cabin transfer. So, cabin translocation task is the key step to assemble and build large manned spacecraft. During the process of translocation, the pitch, yaw and roll of the space station will be affected by the atmospheric resistance and gravitational gradient, which will lead to the decrease of the TTC coverage. In order to guarantee the support ability of communication with the ground station during the process of cabin translocation task, the coverage of narrow beam solid surface relay antenna and wide beam relay antenna in the process of cabin translocation is analyzed. Combined with the communication ability of each antenna, a switching strategy between the narrow beam solid surface relay antenna and wide beam relay antenna is proposed by using the method of multi-antenna fusion. The TTC coverage of space station in the process of cabin translocation is ensured to a maximum while the TTC coverage of single cabin in space station meets its requirements. Finally, a scenario is built

to simulate and verify the correctness and effectiveness of the proposed method.