Poster Session (P)
Poster Lunch (1)

Author: Dr. Weiguang Liang
Beijing Aerospace Command and Control Center (BACCC), China, lwgustc@163.com

EARTH-MOON L2 LIBRATION POINT RELAY SATELLITE LONG-TIME SHADOW ANALYSIS AND AVOIDANCE

Abstract

Relay satellite, orbiting around earth-moon L2 libration point, can provide relay communication between prober on moon far side and tracking telemetry control station on earth. Relay satellite around earth-moon L2 libration point may encounter long-time shadows. Sometimes long-time shadow could threat energy safety of relay satellite in orbit. Basing on engineering objects of moon far side exploration and orbit around earth-moon L2 libration point, distribution rules of long-time shadows are analyzed. High probability long-time shadow appearing during long-term flight can be summarized. There is inverse correlation between shadow duration and occurrence probability. On this basis, long-term shadow avoidance strategies are designed, covering nominal orbit design, avoidance control and libration point orbit station keeping control. Analysis results and effectiveness of avoidance methods are verified by simulation results.