

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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INTERFERENCE SIMULATION FOR THE SATELLITE ANTENNA REFLECTORS

Abstract

Due to the satellite body complicated physical structure and plenty of reflector antennas on board, there will be interference among reflector antennas or antenna and satellite body. This paper analyzed one reflector antenna on the earth deck of the GEO(Geostationary Earth Orbit) telecommunication satellite, interfered by the reflecting effect from other reflector antennas on board, which led to the gain distortion for the partial terrestrial service area. With the help of software, the status can be simulated: The electromagnetic waves are reflected by the main reflectors of the satellite west and east antennas, and then pass through the gaps among the subsidiary reflectors of the satellite west and east antennas and the satellite earth deck, finally are received by the feeds from the reflector antenna on the satellite earth deck. All the results demonstrate that the leaking wave interference occurs among the satellite reflector antennas. Consequently, when the satellite antennas are designed, considering the satellite body and other satellite antennas, their layout must be optimized carefully. And the interference analysis of the electromagnetic wave transmission by the satellite antennas is needed, by which the subversive issue can be avoided.