

SYMPOSIUM ON TECHNOLOGICAL REQUIREMENTS FOR FUTURE SPACE ASTRONOMY AND
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RESEARCH ON THE PAYLOAD COVERAGE ANALYSIS OF SPACE SCIENCE EXPLORATION

Abstract

If we know the position of Earth-observation satellite and its detective field of view angle, we can calculate the ground coverage accurately. To space science missions, it is difficult to calculate the satellite coverage due to the difference observation objects. The coverage analysis of Space science exploration remains the statistical stage of qualitative analysis; we are unable to provide further quantitative analysis. Through the research of computational model for space science exploration coverage, we try to carry out the accurately solution method to quantitative analysis. This is very important for space science missions scheduling and operation. The main contents of this topic include: 1) Build the model of the space coverage analysis of space-time coordinate frame 2) To establish the expression method of sky coverage analysis results 3) Build the quantitative calculation model for sky coverage 4) Research of the dynamic body, field coverage, temporal and spatial process and collaborative detection coverage analysis method Demonstrated in space science missions, mission planning and operation management of the process, it is often needed to calculate the space coverage of the payload for space exploration. Start from the two kinds of data structure definition of swept surface and the swept volume, this article gives a solution for calculating the surface coverage and body coverage, and the follow-up research be prospected.