

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
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ANALYSIS OF SIGNAL AVAILABILITY IN THE GNSS SPACE SERVICE VOLUME

Abstract

The GNSS Space Service Volume(SSV),when compared to the Terrestrial Service Volume(TSV),exhibits distinctly different characteristics for providing Position, Velocity, and Timing(PVT) services for space users. Factors such as large signal strength variation, reduced coverage, and side lobe issues must be considered is the fact that SSV regimes include altitudes both below and above the GNSS constellation altitude. In fact, altitude in general is the dominant variable that determines GNSS signal availability in the SSV. As the limitations of ground orbit system, this paper presents a method of orbit determination of space aircraft based on GNSS. Combination of orbit determination of space aircraft characteristics and construction of GNSS, the satellite visibility algorithms and inter-satellite observation model are discussed, integral filter method is proposed to determine the orbit of space aircraft to make use of the advantage of orbit integral and Kalman filter method.