

Poster Session (P)

Poster Lunch (1)

Author: Mr. jianyong wang

Beijing Institute of Space Mechanics & Electricity, China Academy of Space Technology (CAST), China,
719920772@qq.com

RESEARCH ON DEMONSTRATION OF SPACE-BASED SATELLITES CAPTURE AND TRACKING

Abstract

Ground demonstration technique of space-based satellite target capture and tracking is a key technique to verify satellites capture and tracking algorithms. In this paper, ground demonstration technique of satellites capture and tracking is studied. In accordance of the characteristics of space background and target relative motion, two demonstration systems are put forward and set up to meet the specific needs of demonstration link: an Optical-star-map Target Simulator (OTS) capture and tracking demonstration system and an Electronic-star-map Target Simulator (ETS) capture and tracking demonstration system. The OTS capture and tracking demonstration system consists of TFT-LCD light source and camera lens. The OTS is installed in front of the camera lens, and satellites relative motion scenes are generated and projected on the pupil plane of the camera by means of Navigation Guidance Real-time Simulator (NGRS) which drives the OTS, The camera receives optical star map target simulation images, achieves real-time target capture and feedback the target position data to the NGRS to update the target motion scenes, which gives rise to closed-loop target tracking. The ETS capture and tracking demonstration system receives navigation electronic NGRS star map data and directly generates images of space motion scenes, which are injected into a target capture and tracking module in the form of LVDS format. The processed output target position data from the target capture and tracking module gives feedback to the NGRS, which gives rise to closed-loop target tracking. Two demonstration systems can be independently configured according to specific environmental constraints evolving from different stages of system development, from which the satellites capture and tracking algorithm can be validated.