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STUDY OF THREE-DIMENSIONAL IMAGE RECONSTRUCTION TECHNOLOGY ON SPACE VEHICLES

Abstract

With the development of space technology, the number of aerospace vehicles is increasing year by year. The demand for monitoring and accurate tracking of space targets is growing strongly, which provides support to the cataloging, spacecraft crash warning and protection of aerospace vehicles. Currently, the space targets surveillance system primarily consists of ground-based optical and radar system. This paper introduces a new method of space target monitoring and identification, which is based on the space-based radar system. The study presented in this paper applies optical flow field analysis method to extract three-dimensional structure of target scatters and mainly consists of four steps: obtaining ISAR image sequences of moving target; detecting, tracking and matching of target scatters; three-dimensional structure extracting based on optical flow field analysis; three-dimensional feature of scatters recognition. The reconstructed structure is featured with stable and intuitive characteristic for the accumulation of time and space, which provides a new way to improve the identification probability and reduces the complexity of the model matching library.