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## DESIGN AND SIMULATION OF A SCANNING CONSTELLATION FOR REGIONAL COVERAGE

**Abstract**

Full coverage observation against to a limited scope of area is a common situation in space reconnaissance. To observe a limited scope of area, however, the classic Walker constellation has disadvantages with lower observation performance and larger cost. This paper puts forward a new concept: Scanning constellation, based on the splicing of coverage zone, and the observation area is defined according to the circum-parallelogram. Furthermore, the detailed design method of the scanning constellation is proposed according to the location of the circum-parallelogram, transverse width and the degree of tilt. Additionally, the Scanning constellation is compared with Walker constellation. It can draw a conclusion that the Scanning constellation is much more appropriate for regional coverage mission, which can achieve a full coverage observation using only one-sixth number of satellites of Walker constellation in one orbital period.