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A 53cm-binoculars telescope high-frequency debris laser ranging system

Debris in space poses a great threat to the space activities of human. The laser ranging technology can be introduced to realize high-precision real-time orbit determination of debris, which effectively avoid crashing of debris into spacecrafts. A 53cm-binoculars telescope system is developed in this article, which is capable of fast and steady tracking of spacial targets that are above 400km. Combined with low-power high-frequency sub-nanosecond-level laser generator and single photon detection technology, the spacial debris laser ranging technology is realized by the telescope system. The result of the experiments turn out, that the system has the capability of detecting meter-size spacial debris.