

Progress of laser time transfer on Chinese Space Station

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Abstract:

The technology of Laser Time Transfer (LTT) is being developed at Shanghai Astronomical Observatory for Chinese Space Station which will carry several types of clocks to perform the time comparison between space and ground.

The LTT payload comprised several elements as follow: A detector based on an avalanche photo-diode working in a Geiger mode with a precision of about 30ps. Detector optics system with an over 120° field of view (FOV). An event timer is able to time the photo-diode output in the satellite clock time scale with a precision better than 8 ps. LTT payload has already reached a stability of Time Deviation (TDEV) of 0.2ps@300s in the Lab.

In this report we present the progress of LTT payload including detector, timer and the optics unit, and also some test results and future perspectives of this project.