Mission of lunar orbiter of CAS and Laser Time Transfer

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Abstract

The Chinese Academy of Sciences (CAS) will launch lunar orbit satellite at the end of 2023,which will equip laser time transfer payload to evaluate the performance of the atomic clock on-board and explore the high-accuracy time transfer technology in Earth-Moon space.The payload is designed for two wavelength channels of 532nm / 1064nm, with the total weight of 2.2kg, and the power consumption of less than 22W. The two channel apertures are both 10mm, with FOV of 1○. The laboratory test results show that the time measurement stability of 532nm and 1064nm channel is better than 0.2ps@1000s and 1.3ps@1000s, respectively. The precision of 100-picoseconds Earth-Moon time transfer will be implemented via Lunar Laser Ranging station in China.The mission will support China's Manned lunar exploration project, the scientific research in lunar orbit of the satellites and the construction of the Earth-Moon space time reference.

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