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Near-Earth Object (NEO) Discovery
NEO Characterization

Artificial Lunar Flashes as an useful tool in benchmarking small optical telescopes

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ABSTRACT

Lunar Flash (LF) is an event happening when a meteoroid impacts the surface of the Moon and it is considered as an interesting indicator of the NEO activity. This phenomenon is rising in popularity as a tool for monitoring such events in time and spatial dimensions. The majority of events recorded by Earth-based observatories are made with various optical instruments from small, portable telescopes to stationary equipped with more than 1-meter diameter mirrors.
The aim of our work is the evaluation of the performances of a few Commercial Off-The-Shelf (COTS) small telescopes in the detection of LFs.
We test advanced, modern constructions as well as traditional Newtonians and refractors.
LFs are relatively rare events, observed from Earth every few times per month and vary in brightness and duration. To keep objective, repeatable conditions of the test we decided to use a computer program simulating LFs, which generated them in a controllable manner.
The synthetic images were recorded using different optical setups from a distance of a few dozen meters. The brightness of the computer screen was adjusted to be similar to the Moon's brightness at different phases. Additional parameters like the height above the horizon and atmospheric extinction were considered.
The outcome of the work- efficacy factor for particular setups will be a useful benchmarking tool for individuals commencing LFs observations.
The results of the study help choose the optimal setup for LFs detection and standardise the results.

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