Abstract Submitted
for the APR20 Meeting of
The American Physical Society

Performance of a Prototype Telescope Module for Optical SETI

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Today, the most efficient mechanism for sending large amounts of data through space corresponds to digitally encoded optical signals generated by pulsed lasers. This is the basis of Optical SETI (OSETI). We present a progress report on the design and development of a new telescope for OSETI called the Scanning Observatory For Optical SETI (SOFOS). SOFOS will consist of four independent telescope modules operating in coincidence. We describe performance results from one prototype SOFOS telescope module which we have constructed. The module is composed of a Fresnel lens above a simple camera of four photomultiplier tubes (PMTs) whose discriminated outputs are operated in coincidence so as to eliminate false backgrounds. We measure optimal operating settings for each of the PMTs using tests done in a dark box. The prototype telescope module was operated outdoors to view the night sky with an LED to imitate a hypothetic OSETI laser pulse. We report on the response of the 4-fold coincidence system to the pulsed signal in the presence of skylight and light pollution. Two configurations of the PMTs were tested corresponding to observations at different sky positions. We also describe plans to expand to a two- and then four-module prototype system.

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Date submitted: 08 Jan 2020 Electronic form version 1.4