

52nd IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –
The Next Steps (A4)
SETI 1: SETI Science and Technology (1)

Author: Dr. Daniel Giles
SETI Institute, United States, dgiles@seti.org

REVIEW OF ANOMALIES IN TESS DATA

Abstract

In this work we examine the most anomalous light curves detected from the Transiting Exoplanet Survey Satellite (TESS) full frame images. The TESS prime mission imaged millions of stars on sub-hour cadence over 26 sectors, roughly 1 month per sector. As TESS detects exoplanets and other astrophysical phenomena, it also captures a significant amount of background noise and false positives. Therefore, the main objective of this work was to identify and analyze the most unusual light curves that cannot be easily explained by known astrophysical processes.

We present our techniques and algorithms used to identify anomalous light curves in TESS full frame images. We discuss the challenges in distinguishing between real astrophysical signals and instrumental artifacts, as well as the importance of follow-up observations to confirm the validity of the anomalies. Further, we cover the potential implications of the anomalous light curves on the search for extraterrestrial intelligence. If the anomalies cannot be explained by natural astrophysical processes, they may be indicative of technological activity from advanced civilizations. Finally, we present an exploration of the most unusual light curves captured by TESS, with potential implications for our understanding of the universe and the search for extraterrestrial intelligence.