Abstract Submitted
for the TSS21 Meeting of
The American Physical Society

Periodic Transit Analysis of Exoplanet Host Candidate TIC 464340013 CECILIA HASSAN, University of Dallas — NASAs Transiting Exoplanet Survey Satellite (TESS) conducts an all-sky survey of significantly luminous stars and collects photometric data for potential transit analysis and exoplanet discovery. One exoplanet host candidate, TESS Input Catalog (TIC) item 464340013, is here examined. TIC 464340013 is a spectral type F5 main-sequence star with an absolute magnitude of 7.28. Photometric data of this star is folded into a phase diagram with a coherent transit dip. From this analysis, possible transit parameters are determined, most significantly a period of approximately 3.29 days. A known period is necessary for predicting future transits and facilitating future observations of the star. The transit parameters of TIC 464340013 lie within the bounds of the Tingley diagnostic for exoplanet transits, supporting the existence of a planet orbiting TIC 464340013. Also, successive modeling of the transit for orbital parameter analysis consistently reveals a semimajor axis less than four times larger than the radius of the star. The extreme likelihood of this planets existence, as well as the unusual size of its orbit, makes TIC 464340013 a prime candidate for follow-up investigation, so that the existence of the planet may be confirmed and its parameters more precisely quantified.

Cecilia Hassan
University of Dallas

Date submitted: 02 Apr 2021 Electronic form version 1.4