Characterizing the rapid optical variability of blazars with TESS
ETHAN POORE, MICHAEL CARINI, Western Kentucky University — Blazars are extreme examples of the Active Galactic Nuclei (AGN) phenomeno.The blazar class of radio loud AGN are those oriented such that we are looking nearly down the throat of the relativistic jet, resulting in the observed emission being dominated by processes at work in the jet and being both amplified and time-compressed in our frame. The defining characteristics of blazars are a featureless or nearly featureless optical continuum, large amplitude and highly variable polarization, and large amplitude continuum variability at all wavelengths and on timescales ranging from minutes to decades. The dearth, and in some cases complete absence, of discrete features in their spectra leaves us with only continuum variability and/or polarization variability as a diagnostic of the emission mechanisms at work in many of these objects. In this presentation, I show the results of the analysis of precise, time resolved photometry by the NASA Transiting Exoplanet Survey Satellite of 84 blazars, with the primary goal of determining the optical variability characteristics of blazars on the most rapid timescales that can be sampled. I will discuss the selection of the objects, the process I developed and used to of create light curves (plot of brightness vs time) from the TESS observations, our preliminary conclusions concerning blazar variability on rapid timescales and future directions for this project.

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