

GSU Summer Student Program in Physics and Astronomy

Project: TESS Lightcurves of Nearby Cool Subdwarf Stars

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Abstract: NASA's TESS mission has expanded our understanding of exoplanets and their host stars. However, the released short cadence light curves processed by the TESS/SPOC team has removed not only contaminating light, but true stellar long-term signals. Although the processed light curves are suitable for detecting exoplanets, they limit our ability to study the astrophysical signals inherent to the planet host stars, such as long-term stellar variability.

An REU student would study the lightcurves from nearby cool subdwarfs found in TESS data and apply the results to other stars in the TESS fields to recover measurements of stellar variability. Cool subdwarfs are galactic fossils that are older and much less active than their M dwarf counterparts, so their lightcurves are valuable as calibrators for all other stars in the TESS fields observed. By studying hundreds of subdwarfs all over the sky — especially in the Continuous Viewing Zone (CVZ) of TESS — we can establish a standard star grid that can then be applied to other stars.

Results from this work may be presented at scientific conferences and potentially be included in peer-reviewed articles published by members of the RECONS group.

