

Name: Laura D. Vega (she (ella)/her/hers)

Code: 667

Home institution: University of Maryland, College Park (UMCP)

Name of task: 667. 006, Heising-Simons Bridge Postdoctoral Program

Role in Task/What do you do for CRESST: I am a postdoctoral researcher in the Exoplanets and Stellar Astrophysics Laboratory, where I am a member of the Stellar Flares Group. Our goal is to understand the physics that drives activity in M dwarf stars, as well as how their flares affect space weather environments and the atmospheres of planets orbiting them, to assess whether they are suitable for the search for life. My primary focus is the study of M dwarf flares in the ultraviolet regime.

We are using data from NASA's Swift, NICER, and TESS space telescopes, as well as ground telescopes, to obtain simultaneous multiwavelength observations (spanning X-ray to radio), to assess and compare the rates and energies of flares of active red dwarf stars covering the entire M dwarf mass regime (.08-0.6 solar masses) over time. As part of my Role in Task, I also participate in a broad array of activities and opportunities related to professional development, and increasing diversity, equity, and inclusion at Goddard, UMD, and in the broader astrophysics' community.

Background: I was born and raised in San Antonio, Texas. I attended the University of Texas at San Antonio (UTSA) where I graduated with my bachelor's degree in physics in December 2013. Some of my favorite courses were Universes, Relativity, Cosmology, Gauge Theories, and Unifying Concepts in Physics, taught by Dr. Rafael López-Mobilia, whose passion for the subject fueled my already-existing desire to pursue a career as an astrophysicist! While at UTSA, I conducted undergraduate research on recurrent novae and star clusters under the supervision of Dr. Eric Schlegel. This research experience and his mentorship motivated me to continue to graduate school. In the summer of 2014, I move to Nashville, TN to join the Fisk-Vanderbilt Master's-to-PhD Bridge Program – my second family. I received my master's in physics from Fisk University in 2017 and my PhD in astrophysics from Vanderbilt University in 2021. During my second semester at Fisk, I applied for the NASA Office of Education (OE) MUREP Advanced STEM Training and Research (ASTAR) Fellowship. My proposal was one of only ten selected in the U.S. that year! This opportunity sponsored my graduate research and allowed me to intern at NASA Goddard every summer. I studied a subclass of pulsating supergiant stars known as RV Tauri variables, which are Type II Cepheids found in binary systems within a large circumbinary dust disk. I was supervised by Dr. Keivan Stassun, my thesis advisor, Dr. Rodolfo (Rudy) Montez Jr., Bridge and research mentor, and by Dr. Patricia (Padi) Boyd, NASA mentor. I am grateful to Bridge and NASA for their support throughout my graduate studies and now my



postdoctoral journey with the support of the Heising-Simons Foundation's Astrophysics Postdoctoral Launch Program. I am currently advised by Dr. Padi Boyd and Dr. Alan Smale.

Favorite part of being a CRESST Scientist: It's always the people; I appreciate the opportunity to work with talented and friendly scientists and staff who I admire and look forward to learning from every week. I love working at NASA while also being part of the welcoming and supportive astronomy department at University of Maryland.

Highlight of research as a CRESST Scientist: I am currently working on a few projects, but one exciting highlight is that we have detected a planet transit from one of our target stars simultaneously with TESS and Swift/UVOT – paper in prep! Stay tuned.

Publications:

- Chavali, S., A. Youngblood, R. R. Paudel, et al. 2022. "A Pilot Survey of an M Dwarf Flare Star with Swift's UV Grism." *Research Notes of the AAS*, 6 (9): 201 [10.3847/2515-5172/ac9591]
- Wittrock, J. M., S. Dreizler, M. A. Reefe, et al. 2022. "Transit Timing Variations for AU Microscopii b and c." *The Astronomical Journal*, 164 (1): 27 [10.3847/1538-3881/ac68e5]
- Gilbert, E. A., T. Barclay, E. V. Quintana, et al. 2022. "Flares, Rotation, and Planets of the AU Mic System from TESS Observations." *The Astronomical Journal*, 163 (4): 147 [10.3847/1538-3881/ac23ca]
- Paudel, R. R., T. Barclay, J. E. Schlieder, et al. 2021. "Simultaneous Multiwavelength Flare Observations of EV Lacertae." *The Astrophysical Journal*, 922 (1): 31 [10.3847/1538-4357/ac1946]
- Vega, L. D., K. G. Stassun, R. Montez, et al. 2021. "Multiwavelength Observations of the RV Tauri Variable System U Monocerotis: Long-term Variability Phenomena That Can Be Explained by Binary Interactions with a Circumbinary Disk." *The Astrophysical Journal*, 909 (2): 138 [10.3847/1538-4357/abe302] (NASA Feature)

Grants/Fellowships/Awards:

- NASA TESS Cycle 4 Guest Investigator Program 2021 – 2022
- NASA TESS Cycle 3 Guest Investigator Program 2020 – 2021
- NASA Minority University Research Education Project (MUREP)/Advanced STEM Training and Research (ASTAR): Harriett G. Jenkins Predoctoral Fellowship 2015 – 2020

Three Fun Facts:

1. My mom and dad both have astronomical last names, Vega and Luna!
2. I used to be a mariachi trumpet player.
3. I enjoy going to spin class.