

LAURA D. VEGA

CURRICULUM VITAE

Astrophysicist | CRESST II & Heising-Simons Foundation Postdoctoral Fellow

Department of Astronomy
University of Maryland, College Park
4296 Stadium Drive, College Park, MD 20742

Email: ldvega@umd.edu
[UMD Astro Directory](#)

Exoplanets and Stellar Astrophysics Laboratory
NASA Goddard Space Flight Center
Mail Code 667, 8800 Greenbelt Rd, Greenbelt, MD 20771

Email: laura.d.vega@nasa.gov
<https://science.gsfc.nasa.gov/sed/bio/laura.d.vega>

Center for Research and Exploration in Space Science & Technology II (CRESST II)

Research Interests

My research interests include multi-wavelength astronomy, late-stage stellar evolution, post-AGB binaries, circumbinary disks, and X-ray/UV flares in M-dwarf stars.

Education

Astrophysics Ph.D., 2021 – Vanderbilt University	Advisor: Keivan Stassun
Physics M.A., 2017 – Fisk University	Advisor: Keivan Stassun
Physics B.Sc., 2013 – The University of Texas at San Antonio (UTSA)	Advisor: Eric Schlegel

Publications ([Number] = Number of citations for refereed papers as of CV's date-of-update)

1. Vega L.D. et al. 2022, In Prep.; *Simultaneous TESS and Swift Observations of Wolf 359*.
2. Vega L.D. et al. 2022, In Prep.; *Multiwavelength Observations of the YZ CMi System*.
3. Chavali, S. et al. 2022; *A Pilot Survey of an M Dwarf Flare Star with Swift's UV Grism*, Research Notes of the AAS, 6, 201. []
4. Wittrock, Justin M. et al. 2022; *Transit Timing Variations for AU Microscopii b and c*, The Astronomical Journal, 164, 27. [1]
5. Gilbert E.A. et al. 2022; *Flares, Rotation, and Planets of the AU Mic System from TESS Observations*, The Astronomical Journal, 163, 147. [20]
6. Paudel R.R. et al. 2021; *Simultaneous Multiwavelength Flare Observations of EV Lacertae*, The Astrophysical Journal, 922, 31. [5]
7. Vega L.D. et al. 2021; *Multiwavelength Observations of the RV Tauri Variable System U Monocerotis: Long-Term Variability Phenomena Can Be Explained by Binary Interactions With a Circumbinary Disk*, The Astrophysical Journal, 909, 138. (NASA Feature). [3]
8. Gilbert E.A. et al. 2020; *The First Habitable Zone Earth-sized Planet from TESS. I: Validation of the TOI-700 System*, The Astronomical Journal, 160, 116. (NASA Feature). [57]
9. Kostov, V.B. et al. 2019; *The L 98-59 System: Three Transiting, Terrestrial-size Planets Orbiting a Nearby M Dwarf*, The Astronomical Journal, 158, 32. (NASA Feature). [66]

10. Vega, L.D. et al. 2017; *Evidence for Binarity and Possible Disk Obscuration in Kepler Observations of the Pulsating RV Tau Variable DF Cygni*, The Astrophysical Journal, 839, 48. [9]
11. Schlegel, E.M. et al. 2016; *NGC 5195 In M51: Feedback ‘Burps’ After a Massive Meal?*, The Astrophysical Journal, 823, 75. (**NASA Feature**). [8]

Honors and Awards

Most Outstanding Student Publication - Vanderbilt Physics & Astronomy Department	2018
NASA Office of Education’s MUREP: Harriett G. Jenkins Pre-doctoral Fellow	2015
Best Poster in Physics - Fisk University Science Symposium	2016
Toastmasters International - Competent Leader	2015
Toastmasters International - Competent Communicator	2015
The Sam Madrid Jr. Endowed Scholarship - UTSA	2012
The Dr. B. Thyagarajan Endowed Scholarship - UTSA	2009
Dean’s List - UTSA	2007, 2008
Honor Roll - UTSA	2009, 2010, 2011

Relevant Skills

Languages: English; Spanish

Computer (varying levels of proficiency): Unix; Python; LaTeX; Lightkurve; HEASARC: FTOOLS, XSPEC; SAOImage DS9

Data experience (varying levels of proficiency): X-ray/Ultraviolet (NICER, *Swift*); Optical (*Kepler*, TESS, AAVSO, DASCH); and Radio (SMA)

Fellowships/Grants

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 Pre-doctoral Fellowship	2015 - 2020
Smithsonian Latino Center - LIP (Research at the Center for Astrophysics and Outreach at National Air & Space Museum)	2017, 2018, 2019
Vaughan Family Grant (AAS Conference Travel (UTSA))	2011, 2012, 2014
National Institute on Minority Health and Health Disparities – Nanotechnology and Human Health Core Grant (2012 Summer Undergraduate Nanoparticles Research at UTSA)	2012
Bill & Alicia Hoover Grant (For 2010 Summer Research at UTSA)	2010

Observation Proposals

-
1. ALMA - Cycle 9 - April 2022
Co-I: ACCEPTED; The Origin and Impact of Flares in M Dwarf Systems; PI: Meredith MacGregor
 2. TESS - Cycle 5 - January 2022
Co-I: ACCEPTED; Multiwavelength TESS-Swift-NICER Observations of Pulsations in Flares on Solar-Type Stars; PI: Teresa Monsue
 3. Swift - Cycle 18 - September 2021
Co-I: ACCEPTED: A Swift and Alma View of the Origin and Impact of M-Dwarf Flares; PI: Ward Howard

4. TESS - Cycle 4 - January 2021
Co-I: ACCEPTED; Using Tess 20-S Cadence Data To Study Flares On M Dwarfs; PI: Rishi Paudel
5. NICER - Cycle 3 - November 2020
Co-I: ACCEPTED; A Study of M Dwarf Flares Using Simultaneous High Cadence Multi-wavelength Data; PI: Rishi Paudel
6. XMM-Newton - Announcement of Opportunity 20 - October 2020
Co-I: ACCEPTED; Pilot Study of RV Tau Variables: A new class of X-ray emitting stars? PI: Rodolfo Montez Jr.
7. Hubble Space Telescope Cycle 28 - October 2020
Co-I: ACCEPTED; Confirming a Tentative Detection of an Atmosphere Around a Potentially Rocky Planet; PI: Thomas Barclay
8. Swift - Target of Opportunity - July 2020
PI: ACCEPTED; 20 kilo-second UVOT observations of the AU Mic system
9. Joint TESS-Swift - Cycle 3 - January 2020
PI: ACCEPTED; Exploring the Star-Planet Connection via Simultaneous TESS and Swift Observations of Highly Active M Dwarfs
10. TESS Cycle 3 - January 2020
Co-I: ACCEPTED; Discovering Circumbinary Planets With Tess; PI: Veselin Kostov
11. NICER - Cycle 2 - November 2019
Co-I: ACCEPTED; Multiwavelength Observations of Highly Active M Dwarfs; PI: Rishi Paudel
12. Hubble Space Telescope Cycle 27 - April 2019
Co-I: ACCEPTED; Searching for Secondary Atmospheres in a System of Benchmark Worlds; PI: Thomas Barclay
13. NOAO - Center for High Angular Resolution Astronomy - April 2019
Co-I: ACCEPTED; Diving into the close stellar environment of the magnetic RV Tauri star U Mon; PI: Laurence Sabin
14. SAO - Submillimeter Array - March 2019
PI: ACCEPTED; Hunting for Disks Around Pulsating RV Tau Stars
15. SAO - Submillimeter Array (Filler Program) - March 2019
Co-I: ACCEPTED; Disks around RV Tauri Variable Stars: U Mon in High Resolution; PI: Rodolfo Montez Jr.
16. SAO - Submillimeter Array (Filler Program) - October 2018
Co-I: ACCEPTED; Disks around RV Tauri Variable Stars: U Mon (0.8 mm); PI: Rodolfo Montez Jr.
17. SAO - Submillimeter Array (Filler Program) - October 2018
Co-I: ACCEPTED; Disks around RV Tauri Variable Stars: U Mon; PI: Rodolfo Montez Jr.

Oral Presentations

1. Simultaneous Multiwavelength Observations of the Highly Active M Dwarf YZ CMi, SACNAS, San Juan, Puerto Rico, Oct. 2022

2. [The APS Bridge Program and my journey to the PhD](#); Session L05: Experiences from the APS Bridge Program, APS April Meeting 2022, New York, NY, Apr. 2022.
3. [Multiwavelength observations of Highly Active M Dwarf stars using Swift, TESS, and NICER](#); Ultraviolet Science at Goddard, NASA Goddard Space Flight Center, Greenbelt, MD, Apr. 2022.
4. [Simultaneous Multiwavelength Swift, TESS, and NICER Observations of Highly Active M Dwarf Stars](#); Invited Talk Colloquium, Virtual Meeting, UTSA Department of Physics & Astronomy, San Antonio, TX, Apr. 2022.
5. Stellar Evolution at the Crossroads: Resolving the Nature of RV Tauri Variable Systems Using Unprecedented Observations from Kepler and XMM-Newton Space Telescopes; Invited Talk Colloquium, Virtual Meeting, Howard University, Washington, DC, Mar. 2021.
6. Astrophysics with TESS; NASA Hyperwall; American Astronomical Society, AAS 235th Meeting. Honolulu, HI, Jan. 2020.
7. Observations of Disks Around RV Tauri Variable Stars with the Submillimeter Array; SACNAS Conference, the Henry B. González Convention Center, San Antonio, TX, Oct. 2018.
8. [Evidence for Disk Obscuration in Kepler Observations of the RV Tau Star DF Cyg](#); 5th Annual Astrophysics Conference - DC, The George Washington University, Washington DC, Jul. 2017.
9. [Kepler's Unprecedented High Temporal Precision Observations of the RV Tauri variable DF Cygni](#), Astronomy Journal Club, Vanderbilt University, Nashville, TN, Sep. 2016.
10. [M51 and the Effect of the Arm Resonance and Interaction on Diffuse X-ray Emission](#); American Astronomical Society, AAS 225th Meeting. Seattle, WA, Jan. 2015.
11. [Cosmic Background Radiation and the Evolution of the Universe](#); UTSA's Friday Nights, Celestial Lights Series. San Antonio, TX, April 18, 2014.
12. Diffuse X-ray & Multi-wavelength Emission in Nearby, Face-on Spiral Galaxies; San Antonio, Texas Astrophysics Researchers Meeting. San Antonio, TX, Mar. 22, 2013.
13. "Diffuse X-ray & Multi-wavelength Emission in Nearby, Face-on Spiral Galaxies" and poster presentation "Diffuse X-ray Emission and Star Clusters in Nearby, Face-on Spiral;" UTSA College of Science, COS, Research Conference. San Antonio, TX, Oct. 5, 2012.

Poster Presentations

1. [Simultaneous Multiwavelength Swift, TESS, and NICER Observations of Highly Active M Dwarf Stars](#); Cool Stars 21, Toulouse, France, Jul. 4-9, 2022.
2. [Simultaneous Multiwavelength Observations of the Highly Active M Dwarf YZ CMi](#); TESS Science Conference II, Virtual Meeting, Aug. 2021.
3. [Multiwavelength Observations of the RV Tau Variable U Monocerotis](#); American Astronomical Society, AAS 235th Meeting. Honolulu, HI, Jan. 2020.
4. [X-ray & Submillimeter Observations of the Pulsating RV Tau Variable U Mon](#); 2019 Spring Symposium - The Deaths and Afterlives of Stars; Space Telescope Science Institute; April 2019.

5. [Submillimeter Array Observations of the Large Disk Around RV Tau Star U Mon](#); 7th National Capital Area Disks Meeting; Johns Hopkins University / Space Telescope Science Institute; 26 Sep., 2018.
6. [Observations of Disks Around RV Tau Variables with the Submillimeter Array](#); Cool Stars Conference; Boston University, Boston, MA, July 2018.
7. Evidence for Disk Obscuration in Kepler Observations of the Pulsating RV Tau Variable DF Cyg; Kepler-K2 Science Conference; NASA Ames, Mountain View, CA, Jun. 2017.
8. [Evidence for Binariness in Kepler Observations of the Pulsating RV Tau Variable DF Cygni](#); American Astronomical Society, AAS 229th Meeting. Grapevine, TX, Jan. 2017.
9. [Stellar Evolution at the Crossroads: A Closer Look at the RV Tauri Variable Star DF Cygni](#); 4th Annual DC/MD/VA Astrophysics Meeting, The George Washington University, Washington DC, Jun. 2016.
10. Stellar Evolution at the Crossroads: A Closer Look at the RV Tauri Variable Star DF Cygni; Fisk University Symposium, Nashville, TN, Aug. 2015.
11. Stellar Evolution at the Crossroads: A Closer Look at the RV Tauri Variable Star DF Cygni; Fisk-Vanderbilt Masters-to-PhD Bridge Program, Research Celebration Day. Nashville, TN, Aug. 2015.
12. [Diffuse Hot Gas in M51](#); Chandra's X-ray View of Galaxy Ecosystems; Schlegel, Eric M.; **Vega, L. D.**; Moore, M.; Boston, MA. Jul. 2014.
13. [Diffuse Emission in Nearby, Face-on Spiral Galaxies](#); AAS 223rd Meeting; Schlegel, Eric M.; **Vega, L. D.**; Moore, M.; Washington, DC, Jan. 5-9, 2014.
14. [Diffuse X-ray Emission and Star Clusters in Nearby, Face-on Spiral Galaxies](#); AAS 219th Meeting. Austin, TX, Jan. 7-12 2012.
15. [X-ray Eclipses in the 2010 Outburst of the Recurrent Nova U Sco? & Observations of the 2010 January Outburst of the Recurrent Nova U Sco using NASA's Swift](#); AAS 117th Meeting; McMaster, Laura; **Vega, L.**, et al.; Seattle, WA, Jan. 9-13 2011.
16. ["X-ray Eclipses in the 2010 Outburst of the Recurrent Nova U Sco?" & "Observations of the 2010 January Outburst of the Recurrent Nova U Sco using NASA's Swift"](#); Joint Fall 2010 Meeting of the Texas Sections of the APS, AAPT, Zone 13 of SPS and the National Society of Hispanic Physicists, San Antonio, TX, October 21-23, 2010.

Leadership & Outreach

Better Astronomy for the New Generation! (BANG!) Organizing Committee Member, Sept. 2022 - present

- The University of Maryland's Astronomy Department's BANG! Seminar features speakers and discussions on issues of equity and inclusion, career paths, and soft skills for astronomers.

Research Mentor, Oct. 2020 - Jan 2021

- Mentoring a high school senior in Madison County, VA, developing a research project on classifying M-dwarf flares based on the Solar-flare classification system.

Colorado Springs Cool Science Festival - Zoom-a-Scientist, Oct. 2020

- Virtual (Zoom) chat sessions with children in Fairbanks, AK (3rd grade) and in Colorado Springs, CO (1st grade) about astronomy and what it's like to be a scientist.

Smithsonian National Air & Space Museum Volunteer Astronomer, Oct. 2017 - Present

- [Astronomy Chats](#) & Hispanic Heritage Month Outreach: Innovators in Air and Space Family Day, Wash. DC.

Barrera Veterans Elementary School - Career Day, Von Ormy, TX, May 2019

- Chat with children at different grade levels about astronomy and what it's like to be a scientist.

Bancroft Elementary Saturday Academy - Astronomy Chat, Wash. DC, January 2019

- Visited 2nd and 3rd grade Latinx bilingual students at Bancroft Elementary to talk about astronomy and science. Presentation facilitated by the Smithsonian Air & Space Museum and sponsored by the Smithsonian Latino Center.

Smithsonian Astrophysical Observatory - Rising Stars Camp, St. Katharine Drexel, Roxbury Crossing, MA, July 2018

- Facilitated a number of activities such as the use of the Micro Observatory Robotic Telescopes and software to introduce the children to the life cycle of stars, and other astronomy topics. I also gave a short talk about my research.

Fisk-Vanderbilt Bridge Program Recruitment at SACNAS, Long Beach, CA, Oct 2016

- Booth at SACNAS to recruit undergraduate student for the Fisk-Vanderbilt Bridge Program.

DCA Stars at The University of Maryland - College Park, Summer 2016

- Students and mentors met weekly and discussed our research, goals, setbacks, and successes.

Inclusive Astronomy Conference at Vanderbilt, Nashville, TN, June 17-19, 2015

- Volunteer host for the inaugural conference on diversity and inclusion.

Astronomy Torus 2012 Workshop at UTSA, San Antonio, TX, December 5-7, 2012

- International workshop focused on active galactic nuclei; Local Organizing Committee Member: Logistics planning; Registration desk.

Toastmasters International, 10/2013- Present

- Vanderbilt Toastmasters Vice President of Public Relations (05/2015-Present); UTSA Roadrunner Toastmasters Treasurer (01/2014-07/2014); Deliver prepared and extemporaneous speeches as well as evaluating other speakers.

Society for Advancement of Chicanos & Native Americans in Science (SACNAS)

- Founding officer (Treasurer) for the *first* SACNAS chapter in the state of Tennessee.

The Physics Honor Society | Sigma Pi Sigma at UTSA – President, 04/2013–01/2014

- Organized student study sessions for the Physics GRE; Tutored students in physics and Mathematics; Supplemental officer for Society of Physics Students: Public Relations & Secretary.

Society of Physics Students at UTSA

- *Outreach*: Various on-campus STEM outreach events for high school students like Nano Day with

Partnership for Education & Research in Materials at UTSA & Hispanic Chamber of Commerce's CORE4 STEM Familia Day Expo at UTSA; Space Day for elementary school children at Forest Hills Public Library; Student Panelist for Engineering-Day at UTSA; On-campus liquid-nitrogen ice cream sales with physics demonstrations.

- **Public Relations Officer:** Made posters and flyers of meetings, fundraisers, talks, and events; Managed social media accounts such as SPS' Facebook page; UTSA Physics & Astronomy's "Friday Nights, Celestial Lights" monthly outreach event.

Professional Memberships/Affiliations

Vanderbilt Association of Hispanic and Latinx Alumni	2021 - Present
Sigma Xi The Scientific Research Society ($\Sigma\Xi$)	2015 - Present
National Society of Hispanic Physicists (NSHP)	2013 - Present
Toastmasters International	2013 - Present
Society for Advancement of Chicanos & Native Americans in Science (SACNAS)	2013 - Present
American Physical Society (APS)	2011 - Present
American Astronomical Society (AAS)	2011 - Present
Sigma Pi Sigma The Physics Honor Society ($\Sigma\Pi\Sigma$)	2011 - Present
LeaderShape Institute Alumna & Pebble Club	2011 - Present
UTSA Alumni Association	2013 - 2014
San Antonio Astronomical Association	2013 - 2014
UTSA San Antonio Texas Astrophysics Researchers (STAR)	2011 - 2014
Society of Physics Students (SPS)	2010 - 2013
National Society of Collegiate Scholars (NSCS)	2008 - 2013

References

Keivan G. Stassun, Stevenson Professor of Physics and Astronomy
Vanderbilt University, Nashville, TN
(615) 322-2828
keivan.stassun@vanderbilt.edu
Dissertation Advisor

Rodolfo Montez, Jr., Astrophysicist
Smithsonian Astronomical Observatory, Cambridge, MA
(617) 496-7565
rodolfo.montez@cfa.harvard.edu
Research Mentor, Dissertation Committee Member

Eric M. Schlegel, Vaughan Family Professor of Astronomy
The University of Texas at San Antonio, San Antonio, TX
(210) 458-6425
eric.schlegel@utsa.edu
Dissertation Committee Member, Former Undergraduate Research Advisor

Patricia T. Boyd, Director, NASA SMD Bridge Program
Former Chief, Exoplanets and Stellar Astrophysics Laboratory
NASA Goddard Space Flight Center, Greenbelt, MD
(301) 286-2550
patricia.t.boyd@nasa.gov
NASA Mentor, Dissertation Committee Member