

# Manuel Pichardo Marcano

manuelpm.me

Texas Tech University

Department of Physics and Astronomy

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Pronouns: he/him/his

## Education

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- ▶ *PhD., Physics*  
Texas Tech University, 2018-2022  
Project: Variability of Accreting White Dwarf Binaries and Other Compact Objects  
Advisors: Professor Thomas J. Maccarone and Professor Liliana E. Rivera Sandoval
- ▶ *Master of Science in Physics*  
Texas Tech University, 2016-2018
- ▶ *Joint European Master Degree in Space Science & Technology*  
Project: MUSE observations of the compact objects NGC 6397  
M.S., Space and Science Technology, Luleå tekniska universitet (2014 - 2016)  
M.S., Astrophysics, Université Paul Sabatier Toulouse III, Mention Assez Bien (2014 - 2016)  
Advisors: Dr. Natalie Webb and Dr. Sebastien Guillot
- ▶ *Bachelor of Science, Physics*  
Utah State University, Cum Laude (2014)

## Research Interests

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Compact Objects; Compact Objects in Globular Clusters; White Dwarf Binaries; Cataclysmic Variables; AM CVns

## Research Experience

- ▶ Spring 2016: *Research Project*, Research Institute in Astrophysics and Planetology (IRAP).  
MUSE observations of the compact objects NGC 6397. <https://github.com/manuelmarcano22/MasterThesis>
- ▶ Summer 2015: *Summer Project*, Institute for Gravitational Research, University of Glasgow.  
<https://github.com/manuelmarcano22/aLIGO-wxPython>
- ▶ 2013-2014: *Undergraduate Researcher*, Utah State University, Astrophysics Group.  
<http://arxiv.org/abs/1311.3153>
- ▶ Summer 2013: *Undergraduate Researcher*, National Center for Atmospheric Research  
<http://manuelpm.me/papers/posterhao.pdf>
- ▶ Summer 2012: *Undergraduate Researcher*, Stanford University, Geophysics Dep.  
<http://manuelpm.me/papers/posterinsar.pdf>

## Publications

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### *Papers*

#### Refereed

- ▶ **Pichardo Marcano, M.**, Rivera Sandoval, L. E., Maccarone, T. J., & Scaringi, S. (2021). TACOS: TESS AM CVn Outbursts Survey, *Monthly Notices of the Royal Astronomical Society*, 508, 3275.

- **Pichardo Marciano, M.**, Rivera Sandoval, L. E., Maccarone, T. J., Zhao, Y., & Heinke, C. O. (2021). A 2-d orbital period for a redback millisecond pulsar candidate in the globular cluster NGC 6397, *Monthly Notices of the Royal Astronomical Society*, 503, L51.
- Schwope, A., Buckley, D. A. H., Kawka, A., König, O., Lutovinov, A., Maitra, C., Mereminskiy, I., Miller-Jones, J., **Pichardo Marciano, M.**, Rau, A., Semena, A., Townsend, L. J., & Wilms, J. (2021). Identification of SRGt 062340.2-265715 as a bright, strongly variable, novalike cataclysmic variable, *arXiv e-prints*, arXiv:2106.14538.
- Rivera Sandoval, L. E., Maccarone, T. J., & **Pichardo Marciano, M.** (2020). A Year-long Superoutburst from an Ultra-compact White Dwarf Binary Reveals the Importance of Donor Star Irradiation, *The Astrophysical Journal*, 900, L37.
- Zhao, Y., Heinke, C. O., Tudor, V., Bahramian, A., Miller-Jones, J. C. A., Sivakoff, G. R., Strader, J., Chomiuk, L., Shishkovsky, L., Maccarone, T. J., **Pichardo Marciano, M.**, & Gelfand, J. D. (2020). The MAVERIC survey: a hidden pulsar and a black hole candidate in ATCA radio imaging of the globular cluster NGC 6397, *Monthly Notices of the Royal Astronomical Society*, 493, 6033.
- S.W. McIntosh, W.J. Cramer, **M. Pichardo Marciano**, R.J. Leamon. *The detection of Rossby-like waves on the Sun*. *Nature Astron.* 1, 0086 (2017). doi:10.1038/s41550-017-0086

### Non-refereed

- Maccarone, T. J., Beardmore, A., Mukai, K., Page, K., **Pichardo Marciano, M.**, & Rivera Sandoval, L. (2021). X-ray Pulsations from Nova Her 2021, *The Astronomer's Telegram*, 14776, 1.
- **Pichardo Marciano, M.** (2020). A period of 3.9 hours in the TESS light curve of SRGt 062340.2-265715, *The Astronomer's Telegram*, 14222, 1.
- Jeffrey S. Hazboun, **Manuel Pichardo Marciano** and Shane L. Larson. *Limiting alternative theories of gravity using gravitational wave observations*  
preprint <http://arxiv.org/abs/1311.3153>

### Talks and Posters

- *A search for variable stars and compact binaries in globular clusters with HST*  
Talk. UTRGV Physics Department Colloquium. 2022
- *Results from the TESS AM CVn Outbursts Survey (TACOS)*  
Talk. TESS Science Team Meeting #26. 2021.
- *Astronomía en Ultravioleta*. (Invited)  
Talk. Alpha-Cen Summer School. 2021.
- *A Search for Variable Stars and Compact Binaries in Globular Clusters with HST*  
Talk. Alpha-Cen Annual Meeting and General Assembly. 2020
- *SSCOVaS: Survey for Studying Compact Objects and Variables Stars*  
Poster. 36th Annual New Mexico Symposium. 2020
- *"Compact Binaries in the globular cluster NGC 6397"*  
Talk. Texas APS Section. Lubbock, TX. 2019
- *"MUSE integral field unit observations of the compact objects in the globular cluster NGC 6397"*  
Poster. Stellar Remnants at the Junction. Junction, TX. 2016
- *"Measuring Water Level Fluctuations of Two Connected Wetlands in the Dominican Republic Using InSAR"*  
Poster. SHPE National Conference. Dallas, TX. 2012
- *"Measuring Water Level Fluctuations of Two Connected Wetlands in the Dominican Republic Using InSAR"*  
Talk. USU Physics Department Colloquium. 2012

## Proposals

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- ▶ Hubble Space Telescope (HST): Archival research grant proposal. *A search for variable stars and compact binaries in globular clusters with HST* (Co-Investigator)
- ▶ Transiting Exoplanet Survey Satellite (TESS): *"Studying the outbursts of AM CVns with TESS"* (Co-Investigator)
- ▶ Multi Unit Spectroscopic Explorer (MUSE): *The Hydrogen Alpha Disk Emission from the Compact Binaries of the Globular Cluster NGC 6397* (Co-Investigator 1.5 h)

## Teaching Experience

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- ▶ Graduate Part-Time Instructor PHYS 1403/1404: Instructor of record for Algebra-based, Inquiry-based, Laboratory-based Introductory Physics. TTU, 2017.
- ▶ Teaching Assistant PHYS 1401/2401: Principles of Physics I/II. Lead the laboratories and discussions for the calculus based introductory physics. TTU, 2016-2017.
- ▶ Undergraduate Teaching Fellow PHYS 2215: Physics for Scientists and Engineers Lab I - Utah State, Fall 2013.

## Recognition & Leadership Experiences

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- ▶ Outstanding Ph.D. Student: *TTU Physics & Astronomy Department. 2022*
- ▶ FAMOUS (Funds for Astronomical Meetings: Outreach to Underrepresented Scientists) travel grant for the 239th meeting of the AAS.
- ▶ Co-organizer First ComSciCon en Español. The communicating science workshop for graduate students.
- ▶ Mentor for the Central American-Caribbean bridge in astrophysics
- ▶ Bucy Scholarship in Applied Physics: *TTU Physics & Astronomy Department. 2020-2021*
- ▶ Erasmus Mundus Scholarship: 2-year scholarship awarded by the European Commission
- ▶ Presidential Scholarship: Full 4-year scholarship awarded by the Dominican Government
- ▶ Member: *Sigma Pi Sigma*, The Physics Honor Society
- ▶ Lawrence R. and Abeline Megill Scholarship: *USU Physics Department*

## Technical Skills

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| ▶ <i>Programming Languages:</i> Proficient in Python (Jupyter/iPython notebooks) and shell scripting (bash). | ▶ <i>Software:</i> IRAF/PyRAF, DOLPHOT, SAOImageDS9/JS9    |
| ▶ <i>Markup Languages:</i> L <sup>A</sup> T <sub>E</sub> X, Markdown   | ▶ <i>Version Control Systems:</i> Git                      |
| ▶ <i>Operating Systems:</i> GNU/Linux, OS X, Windows   | ▶ <i>Virtualization and Cloud Services:</i> Docker (basic) |

## Languages

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| ▶ <i>Spanish:</i> Native Language | ▶ <i>French:</i> Intermediate knowledge (B1) |
| ▶ <i>English:</i> Fluent          |  |

## Professional Development

### Workshops

- ▶ **Penn State Summer School in Statistics for Astronomers:** Lectures and tutorials in statistics, astronomy, computer science, and informatics. Summer, 2021
- ▶ **SciPy 2021:** Scientific Computing with Python conference. Summer, 2021
- ▶ **Wiki Scientist Course:** Elevating the Visibility of Quantum Scientists on Wikipedia by the American Physical Society and Wiki Education. Spring, 2021. Blog post: Improving the quality of Spanish language articles on Wikipedia
- ▶ **ComSciCon:** The communicating science workshop for graduate students. June, 2020.
- ▶ **Reclaiming STEM:** Diverse & inclusive SciComm workshop. Fall, 2020.
- ▶ **JWST proposal preparation workshop:** Instrument description, planning tools and hands-on sessions. Spring, 2020.
- ▶ **NRAO Community Days at TTU:** Two-day event, including hands-on sessions and observation preparation and data reduction. Spring, 2019.

## Public Outreach

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- ▶ *Past Author at Astrobites:* One of the original authors. Astrobites is the Spanish language version of Astrobites. URL: <https://astrobites.org/author/manuelmarcano22/>
- ▶ *Caminando en la Luna.* Talk. Planetario de San José UCR. 2021.

### Texas Tech

- ▶ *"Hubble's 30th Anniversary/30 aniversario del telescopio Hubble"*  
Won a competition to host one of the anniversary banners. Bilingual talk (Spanish/English) for Astronight event at TTU, Lubbock, TX. 2020
- ▶ *"A tour of the Milky Way/Un Tour por la Vía Láctea"*  
Bilingual talk for Astronight event at TTU, Lubbock, TX. 2019
- ▶ *"Dimensionality Reduction applied to Large Spectroscopic Surveys"*  
Emmy Noether High School Mathematics Day, Lubbock, TX. 2018

### Dominican Society of Amateur Astronomers (Astrodom)

- ▶ *"Una aguja en un pajar: Buscando remanentes estelares en cúmulos globulares"*  
Santo Domingo, Dominican Republic. 2020
- ▶ *"Galactic Bulge Survey: Fuentes de Rayos X del Bulbo Galáctico"*  
Santo Domingo, Dominican Republic. 2018
- ▶ *"Estudio de la población de objetos compactos en el cúmulo globular NGC 6397 con la unidad de campo integral MUSE"*  
Santo Domingo, Dominican Republic. 2016

## References

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