

Leonardo A. Paredes

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Education

2015—pres. **Ph.D. Candidate in Astronomy**

Georgia State University, United States of America

Thesis Advisor: Dr. Todd J. Henry

2020 **M.Sc. in Physics**

Georgia State University, United States of America

Graduate Advisor: Dr. Todd J. Henry

2007 **B.S. in Physics**

Universidad de La Serena, Chile

Undergraduate Advisors: Dr. Amelia Ramirez and Dr. Rodolfo Barba

Professional History

2016—pres. **CTIO/SMARTS 1.5-m Telescope Fellow**

Georgia State University and RECONS Institute, Atlanta, GA

Manager of scientific operations for CHIRON Spectrograph. Daily duties include: management of the observing queue, oversee data processing and distribution, provide scientific support and general troubleshooting for PIs and users, provide technical support for telescope operations in coordination with observatory staff, oversee maintenance and upgrades to the CHIRON website for target requests and scheduling. Additionally: In 2017, leading the reopening of 1.5-m telescope operations and CHIRON recommissioning on-site. Including the migration of servers for website scheduler, queue and data processing routines to Atlanta facilities.

2012—2015 **Telescope Operator and Observer Support**

AURA/NOIRLab and SMARTS Consortium, La Serena, Chile

Performed several duties that included: Carry-on observing runs, night time telescope operations, instrument support for visiting astronomers, and daytime support for all 4-m and 1-m class telescopes and their instruments at Cerro Tololo Inter-American Observatory (CTIO), Southern Astrophysical Research Telescope (SOAR), SMARTS Telescopes.

2011—2012 **Research Assistant**

Cerro Tololo Inter-American Observatory (CTIO), La Serena, Chile

Part of the Magellanic Clouds Emission Line Survey (MCELS) Project, led by Sean Points, Chris Smith and Armin Rest. Performed the flux calibration for narrow-band imaging 6-year survey, and used the difference imaging technique to identify planetary nebulae in the Magellanic Clouds. Co-mentored REU students for astronomical observations at CTIO.

- 2010—2012 **Physics Teacher**
Preuniversitario CEPECH and Preuniversitario FEULS, La Serena, Chile
- 2010 **Physics Lecturer**
Universidad Pedro de Valdivia, La Serena, Chile
- 2009—2010 **Physics Teacher**
Colegio Seminario Conciliar, La Serena, Chile
- 2009 **Physics Lecturer**
Centro de Formación Técnica Salesianos Don Bosco, La Serena, Chile
- 2005—2009 **Visitor’s Guide and Public Outreach**
La Silla Observatory, European Southern Observatory (ESO), Chile
- 2005—2006 **Teaching Assistant**
Universidad de La Serena, Chile
 Mechanics I and Classical Mechanics at Physics Undergraduate Program.

Awards

- 2020 Chambliss Student Achievement Award for research contribution titled:
*“Discovering New Stellar, Brown Dwarf, and Planetary Companions
 Orbiting 472 of the Nearest K Dwarfs”*, 235th AAS Meeting, Honolulu, HI

Observing Time

- 2020B MINERVA-Australis time through NN-EXPLORE NASA (23 Hours)
- 2017—pres. CHIRON Spectrograph time at CTIO/SMARTS 1.5m Telescope through Georgia State University internal funding.
- 2011—pres. 10 years of experience on 4-m and 1-m class telescopes with optical/infrared imagers and spectrographs, AURA/NOIRLab Astronomy and SMARTS Consortium.

First Author Refereed Journal Publications

1. **Leonardo A. Paredes**, Todd J. Henry, Samuel N. Quinn, Douglas R. Gies, Rodrigo Hinojosa-Goñi, Hodari-Sadiki James, Wei-Chun Jao, and Russel J. White. *The Solar Neighborhood XLVIII: Nine Giant Planets Orbiting Nearby K Dwarfs, and the CHIRON Spectrograph’s Radial Velocity Performance*. In: AJ 162.5, 176 (Nov. 2021), p. 176. DOI: 10.3847/1538-3881/ac082a

Additional Refereed Journal Publications

1. Michele L. Silverstein, Joshua E. Schlieder, Thomas Barclay, Benjamin J. Hord, Wei-Chun Jao, Eliot Halley Vrijmoet, Todd J. Henry, Ryan Cloutier, Veselin B. Kostov, et al. *The LHS 1678 System: Two Earth-Sized Transiting Planets and an Astrometric Companion Orbiting an M Dwarf Near the Convective Boundary at 20 pc*. In: *arXiv e-prints* (Oct. 2021). arXiv: 2110.12079 [astro-ph.EP]
2. Allen B. Davis, Songhu Wang, Matias Jones, Jason D. Eastman, Maximilian N. Günther, Keivan G. Stassun, Brett C. Addison, Karen A. Collins, Samuel N. Quinn, et al. *TOI 564 b and TOI 905 b: Grazing and Fully Transiting Hot Jupiters Discovered by TESS*. in: *AJ* 160.5, 229 (Nov. 2020), p. 229. DOI: 10.3847/1538-3881/aba49d. arXiv: 1912.10186 [astro-ph.EP]
3. Ismael Mireles, Avi Shporer, Nolan Grieves, George Zhou, Maximilian N. Günther, Rafael Brahm, Carl Ziegler, Keivan G. Stassun, Chelsea X. Huang, et al. *TOI 694b and TIC 220568520b: Two Low-mass Companions near the Hydrogen-burning Mass Limit Orbiting Sun-like Stars*. In: *AJ* 160.3, 133 (Sept. 2020), p. 133. DOI: 10.3847/1538-3881/aba526. arXiv: 2006.14019 [astro-ph.SR]
4. Romy Rodríguez Martínez, B. Scott Gaudi, Joseph E. Rodriguez, George Zhou, Jonathan Labadie-Bartz, Samuel N. Quinn, Kaloyan Penev, Thiam-Guan Tan, David W. Latham, et al. *KELT-25 b and KELT-26 b: A Hot Jupiter and a Substellar Companion Transiting Young A Stars Observed by TESS*. in: *AJ* 160.3, 111 (Sept. 2020), p. 111. DOI: 10.3847/1538-3881/ab9f2d. arXiv: 1912.01017 [astro-ph.EP]
5. G. Zhou, J. N. Winn, E. R. Newton, S. N. Quinn, J. E. Rodriguez, A. W. Mann, A. C. Rizzuto, A. M. Vanderburg, C. X. Huang, et al. *A Well-aligned Orbit for the 45 Myr-old Transiting Neptune DS Tuc Ab*. In: *ApJ* 892.2, L21 (Apr. 2020), p. L21. DOI: 10.3847/2041-8213/ab7d3c. arXiv: 1912.04095 [astro-ph.EP]
6. Chelsea X. Huang, Samuel N. Quinn, Andrew Vanderburg, Juliette Becker, Joseph E. Rodriguez, Francisco J. Pozuelos, Davide Gandolfi, George Zhou, Andrew W. Mann, et al. *TESS Spots a Hot Jupiter with an Inner Transiting Neptune*. In: *ApJ* 892.1, L7 (Mar. 2020), p. L7. DOI: 10.3847/2041-8213/ab7302. arXiv: 2003.10852 [astro-ph.EP]
7. P. Dorval, G. J. J. Talens, G. P. P. L. Otten, R. Brahm, A. Jordán, P. Torres, L. Vanzi, A. Zapata, T. Henry, et al. *MASCARA-4 b/bRing-1 b: A retrograde hot Jupiter around a bright A-type star*. In: *A&A* 635, A60 (Mar. 2020), A60. DOI: 10.1051/0004-6361/201935611. arXiv: 1904.02733 [astro-ph.EP]
8. Matias I. Jones, Rafael Brahm, Nestor Espinoza, Songhu Wang, Avi Shporer, Thomas Henning, Andrés Jordán, Paula Sarkis, **Leonardo A. Paredes**, et al. *HD 2685 b: a hot Jupiter orbiting an early F-type star detected by TESS*. in: *A&A* 625, A16 (May 2019), A16. DOI: 10.1051/0004-6361/201834640. arXiv: 1811.05518 [astro-ph.EP]

9. Roland Vanderspek, Chelsea X. Huang, Andrew Vanderburg, George R. Ricker, David W. Latham, Sara Seager, Joshua N. Winn, Jon M. Jenkins, Jennifer Burt, et al. *TESS Discovery of an Ultra-short-period Planet around the Nearby M Dwarf LHS 3844*. In: ApJ 871.2, L24 (Feb. 2019), p. L24. DOI: 10.3847/2041-8213/aafb7a. arXiv: 1809.07242 [astro-ph.EP]
10. Songhu Wang, Matias Jones, Avi Shporer, Benjamin J. Fulton, **Leonardo A. Paredes**, Trifon Trifonov, Diana Kossakowski, Jason Eastman, Seth Redfield, et al. *HD 202772A b: A Transiting Hot Jupiter around a Bright, Mildly Evolved Star in a Visual Binary Discovered by TESS*. in: AJ 157.2, 51 (Feb. 2019), p. 51. DOI: 10.3847/1538-3881/aaf1b7. arXiv: 1810.02341 [astro-ph.EP]
11. Louis Gonzalez, Misty C. Bentz, and **Leonardo Paredes**. *V-Band Photometric Monitoring of 852 Wladilena*. In: *Minor Planet Bulletin* 46.1 (Jan. 2019), pp. 8–9
12. Misty C. Bentz, Caleb Abbot, Steven Agudelo, Steven Dassing, Wyatt Flynn, Austin Gibbs, Louis Gonzalez, Bokyoung Kim, **Leonardo Paredes**, et al. *Filtered Photometric Monitoring of 1591 Baize*. In: *Minor Planet Bulletin* 45.4 (Oct. 2018), pp. 311–312
13. J. L. Prieto, A. Rest, F. B. Bianco, T. Matheson, N. Smith, N. R. Walborn, E. Y. Hsiao, R. Chornock, **L. Paredes Álvarez**, et al. *Light Echoes from η Carinae’s Great Eruption: Spectrophotometric Evolution and the Rapid Formation of Nitrogen-rich Molecules*. In: ApJ 787.1, L8 (May 2014), p. L8. DOI: 10.1088/2041-8205/787/1/L8. arXiv: 1403.7202 [astro-ph.SR]
14. Andrea Kunder, Peter B. Stetson, Santi Cassisi, Andrew Layden, Giuseppe Bono, Márcio Catelan, Alistair R. Walker, **Leonardo Paredes Alvarez**, James L. Clem, et al. *The RR Lyrae Variables and Horizontal Branch of NGC 6656 (M22)*. In: AJ 146.5, 119 (Nov. 2013), p. 119. DOI: 10.1088/0004-6256/146/5/119. arXiv: 1308.6573 [astro-ph.SR]

Non-Refereed Journal Publications and Conference Proceedings

1. **L. A. Paredes**, T. J. Henry, W. Jao, H. James, R. Hinojosa, and Recons Team. *A Radial Velocity Survey of the Complete Sample of K Dwarfs within 25 Parsecs*. In: *American Astronomical Society Meeting Abstracts*. Vol. 53. Jan. 2021, p. 332.02
2. T. Henry, W. Jao, **L. Paredes**, E. Vrijmoet, and Recons. *The SMARTS Way to Explore 10000 of the Nearest Star Systems*. In: *American Astronomical Society Meeting Abstracts*. Jan. 2020
3. **L. Paredes**, T. Henry, D. Nusdeo, H. James, W. Jao, and Speckle Team. *Discovering New Stellar, Brown Dwarf, and Planetary Companions Orbiting 472 of the Nearest K Dwarfs*. In: *American Astronomical Society Meeting Abstracts*. Jan. 2020, p. 374.03

4. Azmain Nisak, Russel White, **Leonardo Paredes**, Hodari-Sadiki James, and Todd Henry. *Lithium Depletion and Stellar Jitter Measurements in Young Open Clusters*. In: *American Astronomical Society Meeting Abstracts #233*. Vol. 233. Jan. 2019, p. 364.03
5. Adam F. Kowalski, Joel Allred, Roy Axelson, Alexander Brown, Brad Carter, C. A. Grady, Todd Henry, Rodrigo Hinojosa, Wei-Chun Jao, et al. *A 7-Day, Multiwavelength Flare Monitoring Campaign on AU Mic*. In: *American Astronomical Society Meeting Abstracts #233*. Vol. 233. Jan. 2019, p. 360.14
6. **Leonardo Paredes**, Todd Henry, Daniel A. Nusdeo, Hodari-Sadiki James, and Rodrigo Hinojosa. *K-KIDS: Radial Velocity Search of Closest Companions to K Dwarfs within 25 pc with the CHIRON Spectrograph at the CTIO/SMARTS 1.5m*. In: *American Astronomical Society Meeting Abstracts #233*. Vol. 233. Jan. 2019, p. 259.34
7. **Leonardo Paredes**, Todd Henry, Daniel Nusdeo, J. Winters, and Tolga Dincer. *K-KIDS: K Dwarfs and Their Companions. First Results from Radial Velocity Survey with CHIRON Spectrograph*. In: *American Astronomical Society Meeting Abstracts #231*. Vol. 231. Jan. 2018, p. 157.09
8. Todd J. Henry, Wei-Chun Jao, and **Leonardo Paredes**. *Our View of the Solar Neighborhood Before, During, and After Gaia (invited talk for session, Impact of Gaia Astrometry on Dynamical Astronomy)*. In: *AAS/Division of Dynamical Astronomy Meeting #48*. June 2017, p. 200.02
9. **Leonardo Paredes-Alvarez**, Daniel Anthony Nusdeo, Todd J. Henry, Wei-Chun Jao, Douglas R. Gies, Russel White, and RECONS Team. *The K-KIDS Sample: K Dwarfs within 50 Parsecs and the Search for their Closest Companions with CHIRON*. in: *American Astronomical Society Meeting Abstracts #229*. Vol. 229. Jan. 2017, p. 344.13
10. Daniel Anthony Nusdeo, Jennifer Winters, **Leonardo Paredes-Alvarez**, Elliott Horch, Wei-Chun Jao, Todd J. Henry, and RECONS Institute. *K-KIDS: Companions to K Dwarfs Within 50 Parsecs*. In: *American Astronomical Society Meeting Abstracts #229*. Vol. 229. Jan. 2017, p. 344.12
11. **L. Paredes**, S. D. Points, R. C. Smith, A. Rest, G. Damke, A. Zenteno, and MCELS Team. “The MCELS Data Reduction Pipeline and Its Application to PNe Searches in the LMC”. in: *Fifty Years of Wide Field Studies in the Southern Hemisphere: Resolved Stellar Populations of the Galactic Bulge and Magellanic Clouds*. Ed. by S. Points and A. Kunder. Vol. 491. 2015, pp. 366–369
12. D. Calderon Espinoza, B. Indahl, **L. Paredes Alvarez**, C. Kaleida, and F. J. Virgili. *GRB 130131B: CTIO 0.9-m optical upper-limits*. In: *GRB Coordinates Network 14202* (Jan. 2013), p. 1

Invited Talks

- “*Using CHIRON and the CTIO/SMARTS 1.5m for TESS Follow-up*” at Exoplanet Exploration Program Analysis Group (EXOPAG) Meeting, January 2019, Seattle, WA.

External Funding — Continuing

2019—2022 Received as Collaborator. P.I.: Todd J. Henry
A Reconnaissance of the 5000 Nearest K Dwarfs
\$326,679 from the National Science Foundation

External Funding — Concluded

2019 Received as Invited Speaker for EXOPAG Meeting 2019
Using CHIRON and the CTIO/SMARTS 1.5m for TESS Follow-up
Travel and lodging grant from NASA

Professional Organization Activities

2019—pres. Member
NASA Science Interest Group on Exoplanet Demographics (SIG2)

2017—pres. Member
Astronomy Peer Advising Leaders (AstroPAL). Mentorship student program for the Astronomy Graduate Program at Georgia State University. Mentoring first and second year astronomy graduate students, and as lecturer for focus group activities such as astronomy coding workshops and grad research practices.

2016—pres. Member
American Astronomical Society (AAS)

Programming Experience

- Python 2/3 with data analysis and visualization packages: astropy, numpy/scipy, pandas, matplotlib, bokeh, and others. Used extensively on image, spectra, and large catalog data, developing data analysis pipelines, data quality control, visualization, and publishable products. Main coding language I use for research work since 2011.
- IRAF/pyraf. Used extensively for CCD image processing such as bias/flat corrections, astrometric solutions, co-adding, mosaicing, aperture photometry and flux calibration.
- IDL and astronomy packages for spectroscopic data reduction and visualization.
- SQL Server for various purposes such as queries, large data sets storage, database maintenance and inter-operability for the CHIRON Scheduler web application.
- HTML/PHP/Javascript limited to maintenance and upgrades of CHIRON Scheduler web application.

Teaching Experience

Lab.	Astronomy of the Solar System (ASTR 1010) <i>Georgia State University</i>
Lab.	Stellar and Galactic Astronomy (ASTR 1020) <i>Georgia State University</i>
Lecture	Mechanics, Physics 101 (2 semesters) <i>Universidad Pedro de Valdivia</i>
Lecture	Electromagnetism, Physics 201 (2 semesters) <i>Universidad Pedro de Valdivia</i>
Lecture	High School Physics (9 semesters) <i>Colegio Seminario Conciliar, Preuniversitario CEPECH and FEULS</i>
T.A.	Mechanics I and Classical Mechanics (2 semesters) <i>Universidad de La Serena</i>

Other Professional Activities

- International Ranked Chess player, International Chess Federation (FIDE)
- Under-18 National Chess Champion 2002, FEDACH Santiago, Chile
- Under-18 National Chess Vice-Champion 2003, Melipilla, Chile
- First Place at Intercollegiate Zonal Team Chess Championship 2004, Chile
- Awarded 2006 Best Chess Player of University of La Serena, Chile
- Competitive Freestyle Slalom Skater, World Slalom Series 2014-2015