

# Thiago Ferreira dos Santos

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## RESEARCH INTERESTS

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**Stellar Astrophysics.** Population III, spectroscopy, stellar abundances, oscillations, activity, solar analogues/twins, blue stragglers, white dwarfs, wide and close binary systems; **Galactic Structure and Archaeology.** stellar surveys, Galactic bulge and disc, stellar content, and infrared observations; **Exoplanets and Brown Dwarfs.** formation and evolution, dynamics, wide binaries, star-planet interactions, detection techniques, and atmospheric escape.

## EDUCATION

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### Yale University

PhD candidate in Astrophysics

08/2023 – Present

New Haven (CT), U.S.

### Universidade de São Paulo (IAG/USP)

M.Sc in Astronomy; Dissertation advisor: Jorge Meléndez, PhD

Dissertation: [Unveiling Planetary Systems in Solar Twins with High-Precision Radial Velocity](#)

08/2021 – 07/2023

São Paulo (SP), Brazil

### Universidade Federal de Santa Catarina (UFSC)

B.Sc. in Physics; Supervisor: Roberto Saito, PhD

03/2016 – 08/2021

Florianópolis (SC), Brazil

## PUBLICATIONS

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Full record at [ADS Library](#) | [SciX](#)

### Peer-Reviewed Publications

14. **Ferreira, T.**, Bellinger, E.P., Farag, E., Lindsay, C.J., accepted for publication in ApJ (Jan 2026).  
Red-Giant Asteroseismology of Low-Mass Population III Stars
13. **Ferreira, T.**, Yana Galarza, J. et al., submitted to AAS Journals (Dec 2025; [arXiv:2512.17072](#)).  
Hidden Companions of the Early Milky Way I. New  $\alpha$ -Enhanced Exoplanet Hosts
12. **Ferreira, T.**, Bellinger, E.P., Farag, E., Lindsay, C.J., in press ([arXiv:2602.16082](#)).  
[Evolution of Low-Mass Population III Stars: Convection, Mass Loss, Nucleosynthesis, and Neutrinos](#)
11. Winnick, I., et al., (incl. **Ferreira, T.**), accepted for publication in AJ (Nov 2025; [arXiv:2508.16513](#)).  
Extreme Lithium Depletion in Solar Twins: Challenging Non-Standard Mixing Models
10. Galarza J. Y., Lorenzo-Oliveira, D., **Ferreira T.**, et al., 2025, ApJ, 983, 70.  
[HIP 8522: A Puzzling Young Solar Twin with the Lowest Detected Lithium](#)
9. Fermiano, V., et al., (incl. **Ferreira, T.**), 2024, A&A, 690, L7.  
[The Young Exoplanetary System TOI-4562: Confirming The Presence of a Third Body in the System](#)
8. **Ferreira, T.**, Rice, M., et al., 2024, AJ, 168, 145.  
[SOLES XI. The Aligned Orbit of TOI-2533 b, a Transiting Brown Dwarf Orbiting an F8-type Star](#)
7. Galarza J. Y., **Ferreira T.**, Lorenzo-Oliveira, D., et al., 2024, AJ, 168, 91.  
[TOI-1173 A b: The First Inflated Super-Neptune in a Wide Binary System](#)
6. Galarza J. Y., Reggiani H., **Ferreira T.**, et al., 2024, ApJ, 974, 122.  
[Detailed abundances of the planet-hosting TOI-1173 A/B system: Possible evidence of planet engulfment in a very wide binary](#)

5. Saito R. K., et al., (incl. **Ferreira, T.**), 2024, A&A, 689, A148.  
The VISTA Variables in the Vía Láctea eXtended (VVVX) ESO public survey: Completion of the observations and legacy
4. **Ferreira T.**, Saito R. K., Minniti D., et al., 2024, MNRAS, 527, 10737.  
A benchmark white dwarf-ultracool dwarf wide field binary
3. Botan, E., et al., (incl. **Ferreira, T.**), 2021, MNRAS, 504, 654.  
Unveiling short-period binaries in the inner VVV bulge
2. Herpich, F.R., et al., (incl. **Ferreira, T.**), 2021, A&A, 647, A169.  
VVV survey near-infrared colour catalogue of known variable stars
1. **Ferreira, T.**, Saito, R.K., Minniti, D., et al., 2019, MNRAS, 586, 1220.  
The asymptotic evolution of the stellar merger V1309 Sco: a Blue Straggler in the making?

## Non-Referred Publications & Conference Proceedings

10. **Ferreira, T.**, Bellinger, E., Farag, E., Lindsay, C., 2025. TASC9/KASC16.  
*On the Structure and Oscillations of the First Stars*
9. **Ferreira, T.** & Meléndez, J., 2023, BASBr, 34, 264.  
*HIP 102152b: A low-mass planet candidate around an old solar twin*
8. **Ferreira, T.** & Meléndez, J., 2022. Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun.  
*HIP 102152b: A low-mass planet candidate around an old solar twin*
7. **Ferreira T.S.**, Saito, R.K., & Minniti D., 2021, The Astronomer's Telegram #14626.  
*VVV near-IR observations of the X-ray transient Swift J174038.1-273712*
6. **Ferreira T.S.**, Saito, R.K., & Minniti D., 2021, The Astronomer's Telegram #14625.  
*VVV near-IR observations of V6585 Sgr progenitor*
5. **Ferreira dos Santos, T.** & Kalbusch Saito, R. 2020, Planets 2020, Ground and Space Observatories 11.  
*Exoplanetary transits in the Galactic bulge*
4. **Ferreira, T.**, Saito, R.K., Gran, F. et al. 2018, RNAAS, 2, 39.  
*VVV Survey Orbital Period Confirmation for the Cataclysmic Variable IGR J17014-4306*
3. Masetti, N., **Ferreira, T.S.**, Saito, R.K., et al. 2018, The Astronomer's Telegram #11992.  
*The possible VVV near-infrared counterpart of IGR J17503-2636*
2. Kammers, R., **Ferreira, T.S.**, Saito, R.K. & Minniti, D. 2018. The Astronomer's Telegram #11365.  
*The likely progenitor of Nova ASASSN-18ds*
1. **Ferreira, T.S.** & Saito, R.K. 2017, The Astronomer's Telegram #10780.  
*The likely progenitor of Nova ASASSN-16ra*

## RESEARCH EXPERIENCE

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<b>PhD Dissertation</b>	09/2025 – Present
<i>Advisor: Earl P. Bellinger, PhD</i>	
<b>Pre-Thesis Doctoral Research</b>	08/2023 – 09/2025
Evolution and Asteroseismology of Low-Mass Population III Stars + The Formation of Brown Dwarfs	
<i>Advisors: Earl P. Bellinger, PhD; Malena Rice, PhD</i>	
<b>M.Sc. Graduate Research Assistant</b>	08/2021 – 08/2023
Characterising Solar Twins with HARPS Radial Velocity Observations	
<i>Advisor: Jorge Luis Meléndez Moreno, PhD</i>	

## Undergraduate Research Assistant

08/2017 – 08/2021

Time-series Analysis of Near-IR Variability with ESO/VVV & VVV-X Surveys

Advisor: Roberto Kalbusch Saito, PhD

## TELESCOPE OBSERVING EXPERIENCE

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<b>Subaru Telescope 8.2-m / HDS</b> – 1.5 nights, PI	2026A
– Uncovering Early Supernova Signatures in CEMP Giant Stars	
<b>Gemini South Telescope 8.1-m / GHOST</b> – 1.5 nights, PI	2026A
– Uncovering Early Supernova Signatures in CEMP Giant Stars	
<b>Magellan Clay Telescope 6.5-m / MIKE &amp; PFS</b> – 2 nights, Co-I	2026A
– Exploring the Origin of Exoplanets in the Milky Way's Thick-Disk	
<b>Gemini North/South 8.1-m / GHOST &amp; MAROON-X</b> – 2 nights, Co-I	2026A
– Exploring the Origin of Exoplanets in the Milky Way's Thick-Disk	
<b>Gemini South Telescope 8.1-m / GHOST</b> – 0.5 nights, DDT	2025B
– Confirming the First Exoplanet Around a Milky Way Halo Star	
<b>Magellan Clay Telescope 6.5-m / WINERED</b> – 1 night, PI	2025A
– Investigating Atmospheric Outflows in a Neptunian-desert Planet Using He I $\lambda 10\,833\text{ \AA}$	
<b>Magellan Clay Telescope 6.5-m / PFS</b> – 2 nights, Co-I	2025A
– Confirming Thick Disc Membership for Known Exoplanets and TESS objects of interest	
<b>Magellan Clay Telescope 6.5-m / MIKE</b> – 12 nights (total), Co-I	2024B, 2025A
– Exploring the star–planet connection with solar-type hosts	
– Correlated Abundances of Exoplanets and Their Host Stars: Constraints from Polluted White Dwarfs in Stellar Binaries	
– Confirming Thick Disc Membership for Known Exoplanets and TESS objects of interest	
<b>ESO 3.6-m Telescope / HARPS</b> – 6 nights, PI	2023A
– How rare are analogues of the Solar System?	

## TEACHING APPOINTMENTS

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<b>ASTR 310 - Galactic and Extragalactic Astronomy, Yale University</b>	Jan 2026 – Present
<i>Instructor:</i> Jeffrey Kenney	
<b>ASTR 556 - Astrostatistics and Data Mining, Yale University</b>	Aug 2025 - Dec 2025
<i>Instructor:</i> Earl Bellinger	
<b>ASTR 220 - Galaxies and Cosmology, Yale University</b>	Jan 2025 - May 2025
<i>Instructor:</i> Robert Zinn	
<b>ASTR 110 - Planets and Stars, Yale University</b>	Aug 2024 - Dec 2024
<i>Instructor:</i> Michael Faison	
<b>AGA 0502 - Planets and Planetary Systems, IAG/USP</b>	Aug 2022 - Dec 2022
<i>Instructor:</i> Jorge Meléndez	

## SERVICES

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- Journal Referee – *The Astrophysical Journal* (ApJ)

## FELLOWSHIPS, AWARDS & GRANTS

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• Yale Conference Travel Fund - Newton Endowment	Jul 2025
• GSAS Yale Graduate Fellowship	Aug 2023 – Present
• Boris Garfinkel Prize Fellowship in Astronomy	Aug 2023
• CAPES M.Sc. Research Fellowship, IAG/USP, Brazil	Aug 2021 – Jul 2023
• exoLaTam 2022 Travel Award	Dec 2022
• Teaching Improvement Program, IAG/USP	Aug 2022 – Dec 2022
• ESO/ALMA Planets2020 Workshop Travel Award	Mar 2020
• CNPq Undergraduate Research Fellowship, Department of Physics, UFSC, Brazil	2017 – 2021

## INVITED TALKS

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<b>Research Talk, Theory and Observation of Stars (TOS) group, HITS/Heidelberg-DE</b>	Jul 2025
Asteroseismology of Low-Mass Population III Stars	

## CONTRIBUTED CONFERENCE PRESENTATIONS

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### Talks

6. exoLaTam 22 – Santiago, Chile HIP 102152b: A Low-Mass Planet Candidate Around an Old Solar Twin.	Dec 2022
5. XLV Annual Meeting of the Brazilian Astronomical Society – Virtual HIP 102152b: A Low-Mass Planet Candidate Around an Old Solar Twin.	Oct 2022
4. 31° Seminário de Iniciação Científica, UFSC – Virtual Studies of Stellar Astrophysics and Exoplanets in the Central Region of the Milky Way.	Jul 2021
3. 30° Seminário de Iniciação Científica, UFSC – Virtual Transiting Extrasolar Planets Orbiting Red Dwarf Stars Towards the Galactic Bulge.	Oct 2020
2. 29° Seminário de Iniciação Científica, UFSC – Virtual Stellar Variability Towards the Central Region of the Milky Way with the VVV/VVV-X Surveys.	Oct 2019
1. 28° Seminário de Iniciação Científica, UFSC – Virtual Stellar Variability Towards the Central Region of the Milky Way with the VVV/VVV-X Surveys.	Oct 2018

### Posters

10. 9th TESS/16th Kepler Asteroseismic Science Consortium Workshop – Vienna, Austria On the Structure and Oscillations of the First Stars.	Jul 2025
9. XLV Annual Meeting of the Brazilian Astronomical Society – Virtual HIP 102152b: A Low-Mass Planet Candidate Around an Old Solar Twin.	Oct 2022
8. Cool Stars 21 – Virtual HIP 102152b: A Low-Mass Planet Candidate Around an Old Solar Twin.	Jul 2022
7. Exoplanets III – Virtual A Box-Fitting Implementation for the Transit Method Detection of Exoplanets.	Jul 2021
6. Sagan Exoplanet Summer Workshop – Virtual Time-Series Analysis of Near-IR Variabilities on VVV M Dwarf Stars.	Jul 2021

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| 5. ALMA Planets2020 Workshop – Santiago, Chile<br>Exoplanetary Transits in the Galactic Bulge.   | Mar 2020 |
| 4. VIII PPGFSC/UFSC Meeting – Florianópolis, Brazil<br>The Asymptotic Evolution of the Blue Straggler V1309 Sco.                                 | Feb 2020 |
| 3. EWASS 2019 – European Astronomical Society<br>Infrared Counterparts of Gaia Alerts (Ivanov+ incl. Ferreira, T.).                              | Jun 2019 |
| 2. VVV & VVV-X Science Workshop – Florianópolis, Brazil<br>On the Photometric Study of the Cataclysmic Variable IGR J17014-4306.                 | Apr 2018 |
| 1. VI PPGFSC/UFSC Meeting – Florianópolis, Brazil<br>Stellar Variability Towards the Central Region of the Milky Way with the VVV/VVV-X Surveys. | Feb 2018 |

## WORKSHOPS AND ADVANCED SCHOOLS ATTENDED

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| • Yale AstroCodEx Hack Day, New Haven, US   | Aug 2025 |
| • MESA Summer School, Leuven, Belgium   | Jul 2025 |
| • Yale Tinsley Workshop, New Haven, US  | Oct 2024 |
| • New York Area Exoplanets Meeting, New York, US                                    | May 2024 |
| • exoLaTam 22, Santiago, Chile  | Dec 2022 |
| • ESO Star–Planet Connection Workshop (Virtual)                                     | Oct 2021 |
| • XIII CBPF School (Virtual)  | Aug 2021 |
| • ZTF Summer School on Variable Stars (Virtual)                                     | Aug 2021 |
| • Sagan Exoplanet Summer Workshop – Circumstellar Disks and Young Planets (Virtual) | Jul 2021 |

## ACADEMIC REFERENCES

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### Earl Patrick Bellinger, PhD (PhD Advisor)

[earl.bellinger@yale.edu](mailto:earl.bellinger@yale.edu)

Department of Astronomy, Yale University – US

### Jorge Luis Meléndez Moreno, PhD (MSc Advisor)

[jorge.melendez@iag.usp.br](mailto:jorge.melendez@iag.usp.br)

Departamento de Astronomia/IAG, Universidade de São Paulo – Brazil

### Roberto Kalbusch Saito, PhD (Undergraduate Advisor)

[robsaito@gmail.com](mailto:robsaito@gmail.com)

Departamento de Física, Universidade Federal de Santa Catarina – Brazil

### Dante Minniti, PhD

[vvvdante@gmail.com](mailto:vvvdante@gmail.com)

Instituto de Astrofísica, Facultad de Ciencias Exactas, Universidad Andres Bello – Chile

Vatican Observatory, I-00120 Vatican City State, Italy

## COMPLEMENTARY INFORMATION

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### Languages

Portuguese—native

English—fluent

Spanish—basic

## Other

- Programming:  $\text{\LaTeX}$ , PYTHON (9+ years); Little experience with C, R, JAVA, BASH.
  - Databases & Softwares: [VISTA/ESO](#) Science Archive, TOPCAT, VIZIER, IRAF/DS9, VOSA, MESA+GYRE, etc.
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