

Heitor Ernandes, Ph.D.



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Education

01/11/2022 – 01/11/2025



Postdoc., Lunds Universitat/Uppsala Universitat Astronomy.

Advisor: Sofia Feltzing

Fellowship from AKW - SELTIC

2018 – 15/09/2022



Ph.D., Universidade de São Paulo Astronomy.

Thesis title: *Abundances in field and globular cluster stars of the Galactic bulge.*

Advisor: Beatriz Barbuy

Fellowship from CAPES

(Nominated) CAPES Prize for the best thesis in Physics and Astronomy in 2022

2019 – 2020



Sandwich Ph.D., University of Edinburgh Astronomy.

Thesis title: *Abundances in field and globular cluster stars of the Galactic bulge.*

Advisor: Chris Evans

Fellowship from CAPES

2013 – 2018



B.Sc. Universidade de São Paulo in Physics.








Research Publications

106 citations /h-index = 5 [ADS link](#).




127 citations /h-index = 6 [Google Scholar link](#).

Journal Articles




- Ernandes, H.**, Castro, M. J., Barbuy, B., Spite, M., Hill, V., Castilho, B., & Evans, C. J. (2023). Reanalysis of neutron-capture elements in the benchmark r-rich star CS 31082-001. *arXiv e-prints*, arXiv:2306.17627. arXiv: 2306.17627 [astro-ph. SR]
- Souza, S. O., **Ernandes, Heitor**, Valentini, M., Barbuy, B., Chiappini, C., Pérez-Villegas, A., ... Bica, E. (2023). Chrono-chemodynamical analysis of the globular cluster NGC 6355: Looking for the fundamental bricks of the Bulge. *arXiv e-prints*, arXiv:2301.05227. arXiv: 2301.05227 [astro-ph. GA]
- Evans, C., Cristiani, S., Opitom, C., Cescutti, G., D'Odorico, V., Alcalá, J. M., ... Zafar, T. (2022). The CUBES science case. *Experimental Astronomy*. doi:10.1007/s10686-022-09864-7. arXiv: 2208.01677 [astro-ph. IM]
- Razera, R., Barbuy, B., Moura, T. C., **Ernandes, H.**, Pérez-Villegas, A., Souza, S. O., ... Zoccali, M. (2022). Abundance analysis of APOGEE spectra for 58 metal-poor stars from the bulge spheroid. doi:10.1093/mnras/stac2136. arXiv: 2208.06634 [astro-ph. SR]
- Zanutta, A., Cristiani, S., Atkinson, D., Baldini, V., Balestra, A., Barbuy, B., ... Zorba, S. (2022). CUBES phase a design overview. *Experimental Astronomy*. doi:10.1007/s10686-022-09837-w. arXiv: 2203.15352 [astro-ph. IM]
- Ernandes, H.**, Barbuy, B., Friaça, A., Hill, V., Spite, M., Spite, F., ... Evans, C. J. (2022). Be, V, and Cu in the halo star CS 31082-001 from near-UV spectroscopy., *510*(4), 5362–5375. doi:10.1093/mnras/stab3789. arXiv: 2202.04450 [astro-ph. SR]

- 7 **Ernandes, H.**, Barbuy, B., Castilho, B., Evans, C. J., & Cescutti, G. (2022). Simulated observations of heavy elements with CUBES. *Experimental Astronomy*.  doi:10.1007/s10686-021-09829-2. arXiv: 2203.15693 [astro-ph.IM]
- 8 Barbuy, B., **Ernandes, H.**, Souza, S. O., Razera, R., Moura, T., Meléndez, J., ... Bica, E. (2021). Gemini/Phoenix H-band analysis of the globular cluster AL 3. *A&A*, 648, A16.  doi:10.1051/0004-6361/202039761. arXiv: 2102.12674 [astro-ph.SR]
- 9 **Ernandes, H.**, Barbuy, B., Friaça, A. C. S., Hill, V., Zoccali, M., Minniti, D., ... Ortolani, S. (2020). Cobalt and copper abundances in 56 Galactic bulge red giants. *A&A*, 640, A89.  doi:10.1051/0004-6361/202037869. arXiv: 2007.00397 [astro-ph.SR]
- 10 **Ernandes, H.**, Dias, B., Barbuy, B., Kamann, S., Ortolani, S., Cantelli, E., ... Rossi, L. (2019). A MUSE study of the inner bulge globular cluster Terzan 9: a fossil record in the Galaxy. *A&A*, 632, A103.  doi:10.1051/0004-6361/201936431. arXiv: 1910.09893 [astro-ph.GA]
- 11 Barbuy, B., Muniz, L., Ortolani, S., **Ernandes, H.**, Dias, B., Saviane, I., ... Held, E. V. (2018). High-resolution abundance analysis of four red giants in the globular cluster NGC 6558. *A&A*, 619, A178.  doi:10.1051/0004-6361/201833953. arXiv: 1810.11703 [astro-ph.SR]
- 12 **Ernandes, H.**, Barbuy, B., Alves-Brito, A., Friaça, A., Siqueira-Mello, C., & Allen, D. M. (2018). Iron-peak elements Sc, V, Mn, Cu, and Zn in Galactic bulge globular clusters. *A&A*, 616, A18.  doi:10.1051/0004-6361/201731708. arXiv: 1801.06157 [astro-ph.SR]
- 13 Barbuy, B., Cantelli, E., Vemado, A., **Ernandes, H.**, Ortolani, S., Saviane, I., ... Siqueira-Mello, C. (2016). High-resolution abundance analysis of red giants in the metal-poor bulge globular cluster HP 1. *A&A*, 591, A53.  doi:10.1051/0004-6361/201628106. arXiv: 1604.02095 [astro-ph.SR]

Conference Proceedings

- 1 Cristiani, S., Alcalá, J. M., Alencar, S. H. P., Balashev, S., Bastian, N., Barbuy, B., ... Zanutta, A. (2022). CUBES: the Cassegrain U-band Efficient Spectrograph. In C. J. Evans, J. J. Bryant, & K. Motohara (Eds.), *Ground-based and airborne instrumentation for astronomy ix* (Vol. 12184, 12184oA).  doi:10.1117/12.2629990. arXiv: 2208.01672 [astro-ph.IM]
- 2 **Ernandes, H.**, Evans, C. J., Barbuy, B., Castilho, B., Cescutti, G., Christlieb, N., ... Smiljanic, R. (2020). Stellar astrophysics in the near-UV with VLT-CUBES. In *Society of photo-optical instrumentation engineers (SPIE) conference series* (Vol. 11447, p. 114476o).  doi:10.1117/12.2562497. arXiv: 2102.02205 [astro-ph.IM]
- 3 **Ernandes, H.**, Dias, B., Barbuy, B., Kamann, S., Ortolani, S., Rossi, L., ... Bica, E. (2018). A MUSE study of the inner bulge globular cluster Terzan 9 : a fossil record in the Galaxy. In *The galactic bulge at the crossroads* (p. 62).  doi:10.5281/zenodo.2651064





Visiting Scholar

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| 2023 |  MIAP-Heidelberg - Supervisor: Maria Bergemann.
Funding: MIAP |
| 2018 |  University of Edinburgh/STFC , Supervisor: Chris Evans.
Funding: UK-Brazil Global Challenges Research Fund |
| 2017 |  ESO-Chile - Supervisor: Bruno Dias.
Funding: ESO |









Fellowships

- 2018 – 2022  **Ph.D., Universidade de São Paulo** CAPES.
Thesis title: *Abundances in field and globular cluster stars of the Galactic bulge.*
Advisor: Beatriz Barbuy
- 2019 – 2020  **Sandwich Ph.D., University of Edinburgh** PRINT-CAPES.
Thesis title: *Abundances in field and globular cluster stars of the Galactic bulge.*
Advisor: Chris Evans
- 2014 – 2017  **Undergraduate research project** PIBIC.
Abundância de elementos do pico do ferro em aglomerados globulares.
Advisor: Beatriz Barbuy

Participation in the scientific teams

- 2022-  **Participation in the scientific team of 4MOST**
As part of the 4MIDABLE (S4) Survey
-  **Participation in the scientific team of the ANDES spectrograph**
Developing the Data Analysis Software in Uppsala
- 2019-  **Participation in the scientific team of the CUBES spectrograph**
Building the stellar astrophysics science case
-  **Participation in the scientific team of the MOSAIC spectrograph**
Working on the COMPASS simulations for metal-poor stars

Congress, meeting, and workshops

- 2023  **MIAPbP on Stellar Astrophysics in the era of Gaia, Spectroscopic, and Asteriseismic surveys** (Congress)
-  **Congress: EAS 2023** (Congress)
-  **IAUS 379 Dynamical Masses of Local Group Galaxies** (Congress)
- 2021  **Workshop on the Future of MOS Technologies** (Workshop)
- 2020  **JWST-UFRGS** (School)
-  **Pristine Meeting.Pristine Meeting** (Meeting)
Presenting: CUBES and MOSAIC simulations
- 2018  **Dark Matter and Neutrinos** (School)
-  **IAU XXX** (Congress)
-  **The Galactic Bulge at the crossroads.** (Congress)
Presenting: Terzan 9 a MUSE analysis
- 2016  **Internation Coloquium ASSOS** (Workshop)

Congress, meeting, and workshops (continued)

- 📌 Congress of Physics Paulo Leal (Congress)
- 📌 School of Spectroscopy in Astrophysics and Laboratory Plasmas (School)

Skills

Languages	📌 Portuguese(Native), English(Fluent), French(Intermediary), Spanish(Intermediary), Swedish(Basic).
Coding	📌 Linux/Unix/MACOSX (Shell Scripting (sh, bash, tcsh, zsh)), Python, R, \LaTeX
Data reduction	📌 IRAF and Pyraf
Database	📌 SQL, ASQL
Misc.	📌 Academic research, teaching, training, consultation.

Specialized Skills

Spectroscopy- Synthetic spectra	📌 Pfant, Turbospectrum, TSFitpy (LTE-NLTE).
Spectroscopy- Full spectral fitting	📌
Large data handling	📌
Age estimations	📌
Data reduction	📌 IRAF and Pyraf
Database	📌 SQL, ASQL
Simulations Forthcoming instruments	📌 MOONS, CUBES, MOSAIC
Data Analysis tools New Instruments	📌 ANDES, MOSAIC

Activities

2022 - 📌 Group seminars (Organizer-Chair)