Andre M. Silva

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Short bio

I am André Silva, a post-doctoral researcher from Instituto de Astrofísica e Ciências do Espaço. My work is focused on two different fileds: instrumentation and exoplanetary science. I am currently working in the PoET solar telescope, in the development of the software that will be used during observations. Complementary to that work, I am also working in the extraction of precise radial velocities, through the development of novel algorithms for such purpose. In the past 3 years I was one of the two instructors of an advanced course provided by CAUP. Furthermore, I also lectured the practical classes of a MsC-level course in Departamento de Física e Astronomia da Faculdade de Ciências da Universidade do Porto.

Education

2019–2024   **Doctor's Degree in Astronomy**, *Programa doutoral em Astronomia*, Faculdade de Ciências da Universidade do Porto
Thesis title: *A new paradigm for the estimation of precise stellar radial velocities.*

2019–2024   **M.Sc. Degree**, *Mestrado Integrado em Engenharia Física*, Faculdade de Ciências da Universidade do Porto
Thesis title: *An expansion to the CHEOPS mission official pipeline.*

Experience

Aug 2024–*now*   **Post-doctoral researcher**, *FCiências.ID*, Faculdade de Ciências da Universidade de Lisboa
Contributing to the development of the PoET solar telescope, under the *FIERCE* ERC project. Focused on the development of the observational software.

Feb–Sept 2024   **Invited assistant**, *Departamento de Física e Astronomia*, Faculdade de Ciências da Universidade do Porto
Invited assistant to teach the practical classes of one MsC-level unit on Bayesian data analysis.

Jul–Sep 2017   **Summer Internship**, *Follow Inspiration*, Porto
Development of software for analysing number of people in the field of view of the cameras mounted on their robots.

Feb–Jun 2017   **Extra curricular Internship (PEEC)**, *IFIMUP*, Faculdade de Ciências da Universidade do Porto
Development of software to automatically collect and analyse data from triboelectric materials.

Feb–Jun 2016	**Extra curricular Internship (PEEC)**, *IFIMUP*, Faculdade de Ciências da Universidade do Porto
	Development of a device to test the performance of *triboelectric* materials.

Teaching experience

Feb - Aug 24	**Teaching the practical classes of the course *Data Analysis in Physics and Astronomy* AST/FIS4002**, *department of Physics and Astronomy from the Faculty of Sciences*, U. Porto
March 2023	**Organizor/instructor in a internal python course for astronomers**, *Centro de Astrofísica e Ciências do Espaço*, U. Porto
March 2022	**Organizor/instructor in a internal python course for astronomers**, *Centro de Astrofísica e Ciências do Espaço*, U. Porto
March 2021	**Organizor/instructor in a internal python course for astronomers**, *Centro de Astrofísica e Ciências do Espaço*, U. Porto

Grants

Aug 2024–*now*	**Post-doctoral fellowship**, *Software development for the PoET telescope, funded by the FIERCE ERC project*, grant number 101052347, Faculdade de Ciências da Universidade de Lisboa
2021–2024	**PhD fellowship**, *Fundação para a Ciência e Tecnologia (FCT): "A new paradigm for the estimation of precise stellar radial velocities: towards the development of an innovative data analysis software"*, Ref: 2020.05387.BD
Feb 2023	**FLAD grant**, *Fund travel to the EPRV V conference in Santa Bárbara, California*, PAPERS 4 USA, reference 2023/052
Nov - Dec 2019	**Research fellowship**, *field of Planetary Systems at Instituto de Astrofísica e Ciências do Espaço*, Ref: IA2019-17-BIM
Apr - Sept 2019	**Scientific Initiation Studenship**, *field of Computacional Astrophysics at Instituto de Astrofísica e Ciências do Espaço*, Ref: IA2019-04-BIC

Talks

Conferences

18 Jul 2023	**Approaches for RV extraction: s-BART and the first steps towards a fully Bayesian model**, *TOE-III*, Porto, Portugal
28 Mar 2023	**Towards a fully Bayesian RV extraction model**, *EPRV5*, Santa Bárbara, California
09 Feb 2023	**sBART application to the ESPRESSO WG1 targets** , *ESPRESSO science team meeting*, Lanzarote, Canary islands

| 03 May 2022 | **s-BART: a semi-Bayesian implementation of template matching for precise Radial Velocities**, *Exoplanets IV*, EPRV splinter, Online |
| 11 Nov 2021 | **A new paradigm for the estimation of precise stellar radial velocities: towards the development of an innovative data analysis software**, *IA-ON8*, Online |

Seminars

| May 2024 | **Towards an improvement in the characterisation of stellar radial velocities**, *ESA research seminar* , European Space Agency (Madrid) |
| Mar 2024 | **The (radial) velocity of stars - detection and characterisation of exoplanets** , *Café com Física*, Departamento de Física da Universidade de Coimbra |

Supervision

Undergraduate projects

| Nov 22 - Feb 23 | **Co-supervisor**, *undergraduate project of Pedro Afonso*, A new activity proxy for finding other Earths, U. Porto |
| Feb - Jun 20 | **Co-supervisor**, *undergraduate project of Mafalda Matos*, An analysis of the performance of CHEOPS mission pipelines: the DRP and archi, U. Porto |

Other projects

Mar - Jul 24	**Co-supervisor**, *Research Initiation Fellowship (BII) of Diogo Marques (ref CIAAUP-03/2023-BII)*, Development of a tool for the normalization of stellar spectra: application to ESPRESSO data, CAUP
Feb - Jul 24	**Co-supervisor**, *extra-curricular project (PEEC) of João Cunha*, Exoplanet detection through a new model for the correction of instrumental effects, U. Porto
Feb - Jul 24	**Co-supervisor**, *extra-curricular project (PEEC) of Carla Henriques*, Development of a GUI interface for the exploitation of data from the s-BART pipeline, U. Porto
Feb - Jul 24	**Co-supervisor**, *extra-curricular project (PEEC) of Martim Paiva*, Solar-to-sky coordinate conversion for PoET operations, U. Porto

Research outputs

First-author Papers

2 André M. Silva et al, 2022 - 'A Novel Framework for Semi-Bayesian Radial Velocities through Template Matching', Astronomy & Astrophysics (⊘ DOI: 10.1051/0004-6361/202142262)

1 André M. Silva et al, 2020 - 'Archi: Pipeline for Light Curve Extraction of CHEOPS Background Stars', Monthly Notices of the Royal Astronomical Society (⊘ DOI: 10.1093/mnras/staa1443)

Co-authored Papers

14 Suárez Mascareño et al, 2024 - 'TESS and ESPRESSO Discover a Super-Earth and a Mini-Neptune Orbiting the K-dwarf TOI-238', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202348958)

13 Palethorpe et al, 2024 - 'Confronting Compositional Confusion through the Characterisation of the Sub-Neptune Orbiting HD 77946', Monthly Notices of the Royal Astronomical Society (🔗 DOI: 10.1093/mnras/stae707)

12 Campante et al, 2024 - 'Expanding the Frontiers of Cool-Dwarf Asteroseismology with ESPRESSO: Detection of Solar-like Oscillations in the K5 Dwarf ϵ Indi', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202449197)

11 Wehbé et al, 2024 - 'Implementation of a Seeing Measurement Device for the PoET Solar Telescope', Proc. SPIE , Ground-Based and Airborne Instrumentation for Astronomy X (🔗 DOI: 10.1117/12.3017481)

10 Leite et al, 2024 - 'PoET, the Paranal Solar ESPRESSO Telescope: A Spatially Resolved Sun in a High Resolution Spectrograph', Proc. SPIE , Ground-Based and Airborne Instrumentation for Astronomy X (🔗 DOI: 10.1117/12.3016776)

9 De Beurs et al, 2024 - 'Characterization of K2-167 b and CALM, a New Stellar Activity Mitigation Method', Monthly Notices of the Royal Astronomical Society (🔗 DOI: 10.1093/mnras/stae207)

8 Passegger et al, 2024 - 'The Compact Multi-Planet System GJ 9827 Revisited with ESPRESSO', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202348592)

7 Castro-González et al, 2023 - 'An Unusually Low-Density Super-Earth Transiting the Bright Early-Type M-dwarf GJ 1018 (TOI-244)', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202346550)

6 Balsalobre-Ruza et al, 2023 - 'KOBEsim: A Bayesian Observing Strategy Algorithm for Planet Detection in Radial Velocity Blind-Search Surveys', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202243938)

5 Mascareño et al, 2023 - 'Two Temperate Earth-mass Planets Orbiting the Nearby Star GJ1002', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202244991)

4 Allart et al, 2022 - 'Automatic Model-Based Telluric Correction for the ESPRESSO Data Reduction Software: Model Description and Application to Radial Velocity Computation', Astronomy & Astrophysics (🔗 DOI: 10.1051/0004-6361/202243629)

3 Lillo-Box et al, 2022 - 'The KOBE Experiment: K-dwarfs Orbited By Habitable Exoplanets: Project Goals, Target Selection, and Stellar Characterization', Astronomy & Astrophysics (🔗 DOI:

[10.1051/0004-6361/202243898](https://doi.org/10.1051/0004-6361/202243898))

2 Faria et al, 2022 - 'A Candidate Short-Period Sub-Earth Orbiting Proxima Centauri', Astronomy & Astrophysics (🔗 DOI: [10.1051/0004-6361/202142337](https://doi.org/10.1051/0004-6361/202142337))

1 Lillo-Box et al, 2021 - 'HD22496b: The First ESPRESSO Standalone Planet Discovery', Astronomy & Astrophysics (🔗 DOI: [10.1051/0004-6361/202141714](https://doi.org/10.1051/0004-6361/202141714))

Posters

7 'The Paranal solar ESPRESSO Telescope - towards a resolved view of the Sun', Leiden, Exoplanets 5, 2024-06-16/2024-06-21

6 'A fully-Bayesian model for RV extraction', Leiden, Exoplanets 5, 2024-06-16/2024-06-21

5 'A Bayesian template matching approach applied to HARPS : towards the improvement of the RV precision', Online, European Astronomical Society Annual meeting 2021, 2021-06-28/2021-07-02

4 'A semi-Bayesian implementation of template matching for precise Radial Velocities', Online, Statistical challenges in Modern astronomy VII, 2021-07-07/2021-07-10

3 'A semi-Bayesian implementation of template matching for precise Radial Velocities', Online, Encontro Ciência 21, 2021-07-28/2021-07-30

2 'A Bayesian approach to precise Radial Velocities', Online, 30th Encontro Nacional de Astronomia e Astrofísica , 2020-09-09/2020-09-11

1 'ARCHI: pipeline for light curve extraction of CHEOPS background stars', Online, Europlanet Science Congress 2020, 2020-06-21/2020-07-09

Outreach

Aug 23   **Night sky guide**, *Observatório do Lago Alqueva*, Portugal

2023   **Ignite session**, *À procura por outra Terra* , Torres Vedras; Ílhavo, Portugal

2023   **Espaço vai à Escola 23**, *Descoberta de outra Terra - deteção de planetas fora do sistema solar*, Online, 5 schools; In person: 5 schools, Portugal

2022   **Espaço vai à Escola 22**, *Descoberta de outra Terra - deteção de planetas fora do sistema solar*,   Online, 3 schools, Portugal

Miscellaneous Experience

Organizing committees

2024 **LoC**, *Part of the local organization committee of the EPRV6 conference*, Porto, Portugal

2019 **LoC**, *Part of the local organization committe of the Porto MW-Gaia WG3 Workshop: Exoplanets in the era of Gaia*, Porto, Portugal