André Silva

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Education

- Doctor's Degree in Astronomy: Aug. 2019 - now
  Instituto de Astrofísica e Ciências do Espaço (IA) + Faculdade de Ciências da Universidade do Porto (FCUP)
- Master's in Physics Engineering: Sept. 2014 - Aug. 2019
  Faculdade de Ciências da Universidade do Porto (FCUP)

Technical Skills

- **Languages:** Python, LabView
- **Tools/Frameworks:** Numpy, OpenCv, Matplotlib, Flask, Latex, Git, Sphinx, Parallel programming, Gaussian Processes, MCMC, Genetic Algorithms
- **Familiar:** R, C++, Matlab, HTML, CSS, SQL, Verilog, Java

Experience

- **Msc Thesis: An expansion to the CHEOPS mission official pipeline (Jan - Sep 2019)**
  Development of an expansion to the official data reduction pipeline of the CHEOPS mission, allowing for the extraction of light curves from background stars in the images. The resulting light curves were also modelled using Gaussian Processes, with the goal of retrieving planetary parameters; *Grade*: 19/20
- **IFIMUP: Extra curricular Internship (Feb 2017 - Aug 2018)**
  Development of software to collect and analyse data from triboelectric materials. The delivered software allowed manual and fully autonomous data acquisition, as well as an integrated tool to process the data.
- **IFIMUP: Extra curricular Internship (Feb 2016 - Aug 2017)**
  Expanded a device used to test triboelectric materials. A new device was designed, tested and built during the course of the project. Afterwards, the device was used on some test runs, showing nominal functioning.
- **Follow Inspiration: Summer Internship (Jul - Sep 2017)**
  Development of software for analyzing number of people in the field of view of the cameras mounted on their robots.

First-author publications

- André M. Silva et al. «A novel framework for semi-Bayesian radial velocities through template matching». In: *A and A* 663, A143 (July 2022), A143. DOI: 10.1051/0004-6361/202142262
- André M. Silva et al. «ARCHI: pipeline for light curve extraction of CHEOPS background stars». In: *MNRAS* 496.1 (2020), pp. 282–294. DOI: 10.1093/mnras/staa1443

Co-author publications

- A. Castro-González et al. «An unusually low-density super-Earth transiting the bright early-type M-dwarf GJ 1018 (TOI-244)». In: *arXiv e-prints*, arXiv:2305.04922 (May 2023), arXiv:2305.04922. DOI: 10.48550/arXiv.2305.04922. arXiv: 2305.04922 [astro-ph.EP]
- A. Suárez Mascareño et al. «Two temperate Earth-mass planets orbiting the nearby star GJ 1002». In: 670, A5 (Feb. 2023), A5. DOI: 10.1051/0004-6361/202244991. arXiv: 2212.07332 [astro-ph.EP]
- J. P. Faria et al. «A candidate short-period sub-Earth orbiting Proxima Centauri». In: 658, A115 (Feb. 2022), A115. DOI: 10.1051/0004-6361/Y202142337. arXiv: 2202.05188 [astro-ph.EP]

- O. Balsalobre-Ruza et al. «KOBEsim: A Bayesian observing strategy algorithm for planet detection in radial velocity blind-search surveys». In: 669, A18 (Jan. 2023), A18. DOI: 10.1051/0004-6361/202243938. arXiv: 2210.11207 [astro-ph.EP]
- J. Lillo-Box et al. «The KOBE experiment: K-dwarfs Orbited By habitable Exoplanets. Project goals, target selection, and stellar characterization». In: 667, A102 (Nov. 2022), A102. DOI: 10.1051/0004-6361/202243898. arXiv: 2209.05205 [astro-ph.EP]
- R. Allart et al. «Automatic model-based telluric correction for the ESPRESSO data reduction software. Model description and application to radial velocity computation». In: *A and A* 666, A196 (Oct. 2022), A196. DOI: 10.1051/0004-6361/202243629. arXiv: 2209.01296 [astro-ph.EP]
- J. Lillo-Box et al. «HD 22496 b: The first ESPRESSO stand-alone planet discovery». In: 654, A60 (), A60. DOI: 10.1051/0004-6361/202141714. arXiv: 2109.00226 [astro-ph.EP]

Talks

- A. M. Silva. «TOE-III: Approaches for RV extraction: s-BART and the first steps towards a fully Bayesian model». Porto, July 18, 2023
- A. M. Silva. «EPRV5: Towards a fully Bayesian RV extraction model». Santa Bárbara, California, Mar. 28, 2023
- A. M. Silva. «ESPRESSO science team meeting - sBART application to the ESPRESSO WG1 targets». Lanzarote, Canary islands, Feb. 2023
- A. M. Silva. «Exoplanets IV (EPRV splinter) - s-BART: a semi-Bayesian implementation of template matching for precise Radial Velocities». Online, May 3, 2022
- A. M. Silva. «IA-ON8 - A new paradigm for the estimation of precise stellar radial velocities: towards the development of an innovative data analysis software». Instituto de Astrofísica e Ciências do Espaço (IA), Nov. 11, 2021
- A. M. Silva. «IA cookie seminar - archi: pipeline for light curve extraction of CHEOPS background stars». Instituto de Astrofísica e Ciências do Espaço (IA), June 25, 2020

Posters

- A. M. Silva. «A semi-Bayesian implementation of template matching for precise Radial Velocities». Online, Encontro Ciência 21, July 28–30, 2021
- A. M. Silva. «A semi-Bayesian implementation of template matching for precise Radial Velocities». Online, Statistical challenges in Modern astronomy VII, July 7–10, 2021
- A. M. Silva. «A Bayesian template matching approach applied to HARPS : towards the improvement of the RV precision». Online, European Astronomical Society Annual meeting 2021, June 28–July 2, 2021
- A. M. Silva. «A Bayesian approach to precise Radial Velocities». Online, 30th Encontro Nacional de Astronomia e Astrofísica, Sept. 9–11, 2020
- A. M. Silva. «ARCHI: pipeline for light curve extraction of CHEOPS background stars». Online, Europlanet Science Congress 2020, June 21–July 9, 2020

Supervision

- Co-supervisor of the MsC thesis of José Lino. ≪Looking at the Sun, finding other Earths≫. U. Porto; Oct. 2022–Nov. 2023
- Co-supervisor of the undergraduate project of de Pedro Afonso. ≪A new activity proxy for finding other Earths≫. U. Porto; Nov. 2022–Feb. 2023
- Co-supervisor of the undergraduate project of de Mafalda Matos. ≪An analysis of the performance of CHEOPS mission pipelines: the DRP and archi≫. U. Porto; Feb.–June 2020

Grants

- FLAD grant (PAPERS 4 USA) to participate in EPRV5, organized in Santa Bárbara, CA, USA;
- PhD fellowship from 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 – Jan. 2021 - now
- Research fellowship in the field of Planetary Systems at Instituto de Astrofísica e Ciências do Espaço (IA). Ref: CIAAUP-28/2019_BI – Nov 2019 - Nov 2020
- Scientific Initiation Studenship in the field of Computacional Astrophysics at the Instituto de Astrofísica e Ciências do Espaço (IA). Ref: CIAAUP-11/x019-BIC – Apr - Sep 2019

Teaching duties

- A. M. Silva. ≪Organizor/instructor in a internal python course for astronomers organized by the "Centro de Astrofísica e Ciências do Espaço"≫. Online, Mar. 2023
- A. M. Silva. ≪Organizor/instructor in a internal python course for astronomers organized by the Centro de Astrofísica e Ciências do Espaço≫. Online, Apr.–May 2021

Observing experience

- Observing run (AOT47) from HARPS-N (Aug. 28–Sept. 3, 2023)
- Two (2) nights of dVM observations with ESPRESSO (Sept. 7–8, 2022)

Committees

- Part of the local organization committe of the *Porto MW-Gaia WG3 Workshop: Exoplanets in the era of Gaia.*

Outreach

- A. M. Silva. ≪Ignite session: À procura por outra Terra - Torres Vedras; Ílhavo≫. Portugal, 2023
- A. M. Silva. ≪Espaço vai à Escola 23 - Descoberta de outra Terra - deteção de planetas fora do sistema solar≫. Online, 5 schools; In-person, 5 schools, Oct. 2023
- A. M. Silva. ≪Espaço vai à Escola 22 - Descoberta de outra Terra - deteção de planetas fora do sistema solar≫. Online, 3 schools, Oct. 2023