

Curriculum Vitae

Paulina **Palma-Bifani**

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Profile

Astrophysicist specialized in the atmospheric characterization of directly imaged exoplanets, leveraging expertise in high-contrast data reduction, atmospheric modeling tools, and spectral analysis and interpretation. Lead developer of open-source community tools and advocate for equity, diversity, and inclusion in STEM.

Education

Ph.D. in Sciences de la Planète et de l'Univers 03/2022–02/2025

Laboratoire Lagrange, Université de la Côte d'Azur, Nice, France

- *Atmospheric diversity of young exoplanets and brown dwarfs with the VLT and ELT*
- Supervisors: Gaël Chauvin (MPIA) and Pierre Baudoz (LIRA, Observatoire de Paris)

Master of Science in Astronomy 03/2020–01/2022

Departamento de Astronomía, Universidad de Chile, Santiago, Chile

- *Atmospheres of objects on the upper planetary-mass limit as a clue to distinguish formation mechanisms*
- Supervisors: Patricio Rojo (U. de Chile) and Gaël Chauvin (MPIA)

Bachelor of Science in Astronomy 03/2015–12/2019

Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile

Work experience

Postdoctoral research:

LIRA, Observatoire de Paris, Meudon, France 04/2025–Ongoing

- Group: Pôle Systèmes Exoplanétaires and Pôle Haute Résolution Angulaire (HRA)
- Focus: Development of Optex, an atmospheric characterization method for young exoplanets, and leading the characterization of the ELT/MICADO instrument for exoplanet atmospheric observations.

Courses/lectures given:

- **University teacher**
 - Experimental physics, Universidad Andres Bello, Chile 08–11/2020
- **University teacher assistant**
 - General Astronomy, Universidad de Chile 08–12/2020
 - Experimental Astronomy, Universidad de Chile 08–12/2020, 03–07/2021, 08–12/2021
 - General Astronomy, Universidad de Chile 03–07/2020
 - Electromagnetism, Universidad de Chile 03–07/2019, 08–12/2019, 03–07/2021
 - Newtonian Systems, Universidad de Chile 08–12/2018
 - Experimental Methods, Universidad de Chile 03–07/2018, 03–07/2020
 - Differential and Integral Calculus, Universidad de Chile 08–12/2017
 - Introduction to Calculus, Universidad de Chile 03–07/2017
- **Workshop teacher assistant**
 - Code/Astro Workshop, online 06/2021, 06/2022
 - Code/Astro Workshop, Northwestern University, Evanston, USA 07/2023
- **Hands-on sessions**
 - git & GitHub hands-on session for PhD students, Laboratoire Lagrange, Nice, France 01/2024
 - ForMoSA hands-on session, Cloud Academy, IPAG, Les Houches, France 03/2023

International collaborations:

- Member of the ELT/PCS R&D roadmap group, ESO, Europe 06/2025–Ongoing
Participating in the composition of the “PCS Roadmap: Science Cases & Top Level Requirements.”
- Member of the MIRAGE ANR and HiRISE science team, France 2024–Ongoing
- Member of the ELT/MORFEO JeDiEx sub-working group, Europe 03/2022–Ongoing
Participating in the elaboration of the white paper to define the direct imaging of exoplanets science case.
- Member of the High-contrast Early Release Science (ERS) JWST team 06/2022–Ongoing
- Member of ForMoSA developers team 2020–Ongoing

Workshops/Schools attended:

- ExoSLAM school, Montreal, Canada 07/2025
- Cloud Academy 3, Les Houches, France 03/2023
- Exo-Atmospheres - École de Physique des Houches, France 09/2022
- Other Worlds Laboratory Summer Programme (OWL), University of Santa Cruz, California, USA 07/2022
- SPECATMOS Summer School, Sorbonne Université, CNRS, IPSL, Frejus, France 05/2022
- ESO Summer Research Programme, [Project E](#), Garching, Germany 07–08/2021

Supervision of interns

- Master student **Idriss Abdoulwahab**, Laboratoire Lagrange, Nice, France 06/2024–08/2024
Project: Development of the [exoSpin](#) Python package and re-analysis of the obliquity of AB Pic b using CRIRES+ observations. Results included in [Ghandi et al. \(2025\)](#)
- Master student **Damien Borja**, Laboratoire Lagrange, Nice, France 06/2023–07/2023
Project: Exploration of various grids of models for the atmospheric characterization of AF Lep b. Results included in [Palma-Bifani et al. \(2024\)](#)

Talks & seminars

1. Seminar, “Visitor at Universidad de Chile, Santiago, Chile” 09/2025
2. Seminar, “Visitor at IPAG, Grenoble, France” 02/2024
3. Seminar, “Exoplanet seminar at LESIA, Paris Observatory, Meudon, France” 01/2024
4. Seminar, “Visitor at Universidad de Chile, Santiago, Chile” 05/2023
5. Seminar, “Visitor at Universidad de Valparaíso, Valparaíso, Chile” 05/2023
6. Seminar, “Visitor at Universidad Adolfo Ibáñez, Santiago, Chile” 05/2023
1. Invited talk, “HRAA Day at LESIA, Paris Observatory, Meudon, France” 01/2024
1. Contributed talk (Planned), “Spirit of Lyot 6 Conference, Pasadena, USA” 02/2026
2. Contributed talk, “Exo-ELT Conference, Garching, Germany” 11/2025
3. Contributed talk, “AO4ELT8, Viña del Mar, Chile” 09/2025
4. Contributed talk, “SOCHIAS, Puerto Montt, Chile” 09/2025
5. Contributed talk, “Two Horses Conference, Berlin, Germany” 07/2024
6. Contributed talk, “SF2A Conference, Marseille, France” 06/2024
7. Contributed talks (x3), “SF2A Conference, Strasbourg, France” 06/2023
8. Contributed talk, “Cloud Academy, IPAG, Les Houches, France” 03/2023
9. Contributed talk, “Exo-ELT Workshop, Frejus, France” 11/2022
10. Contributed talk, “Other Worlds Laboratory Summer Program (OWL), UCSC, USA” 07/2022
11. Contributed talk, “Atmospheres! Do I look like I care about atmospheres?” ESO, Online 08/2021
1. Contributed poster, “Exoclimates VII, Montreal, Canada” 07/2025
2. Contributed poster (x2), “Exoplanets 5 Conference, Leiden, Netherlands” 06/2024
3. Contributed poster, “EDSFA Second year PhD Workshop, Nice, France” 05/2023
4. Contributed poster, “In the Spirit of Lyot Conference, Leiden, Netherlands” 06/2022

Publications

Full peer-reviewed publication list: [NASA/ADS public library](#)

(Counts: **21** publications | **3** as first-author | **18** as co-author | h-index **10**)

Community service & outreach

Events organization

- Organizer of the Exoplanet Seminars, LIRA, Observatoire de Paris, Meudon, France 2025–Ongoing
- SOC member, ForMiX workshop, Heidelberg, Germany 06/2025
- LOC member, HALO workshop, Frejus, France 12/2024
- LOC member, Two HoRSEs conference, Berlin, Germany 09/2024
- SOC & LOC member, Exo-ELT workshop, Frejus, France 11/2022
- SOC member, [Science & Commit](#) workshop, Online 03/2022

Peer review

- ESO delegated proposal reviewer (DPR) 2022–Ongoing
- Postdoc selection committee, invited by Vivien Parmentier, Lagrange, Nice, France 02/2024

Outreach

- Nuit Coupoles Ouvertes, Plateau Calern Telescope site, France 07/2024
- Observatory woman day (*Observatoire au féminin*), Observatoire de la Côte d'Azur, Nice, France 02/2024
- Astronomy day (*Día de la Astronomía*), Cerro Calán, Univ. de Chile 03/2022

Representation

- Postgraduate students representative at Departamento de Astronomía, Univ. de Chile 08/2020–10/2021

Observing experience

Observing proposals

(ESO/VLT)

- Col of program ID:116.2931 at the VLT/MATISSE (PI: M. Houllé) 19 hours
- Col of DDT program ID:115.29GA at the VLT/CRIRES+ (PI: D. Demars) 3.6 hours
- Col of program ID:115.284P at the VLT/HiRISE (PI: A. Vigan) 45.4 hours
- Col of program ID:115.283F at the VLT/CRIRES+ (PI: G. Chauvin) 6.7 hours
- Col of program ID:114.27PG at the VLT/MATISSE (PI: M. Houllé) 11.2 hours
- Col of program ID:114.27B1 at the VLT/XSHOOTER (PI: S. Petrus) 8.4 hours
- Col of program ID:114.273P at the VLT/GRAVITY (PI: G. Chauvin) 3 hours
- Col of program ID:113.26J1 at the VLT/CRIRES+ (PI: D. Demars) 7.5 hours
- Col of program ID:113.26JY at the VLT/CRIRES+ (PI: S. Petrus) 12 hours

(JWST)

- Col of Cycle 3 proposal, ID:4758, JWST/NIRCam (PI: Y. Zhou) 24.2 hours
- Col of Cycle 2 proposal, ID:3514, JWST/NIRSpec and JWST/MIRI (PI: M. Bonnefoy) 8.2 hours

Observing nights

- ESO/VLT/UT3 visitor mode, HiRISE, three full nights 09/2025
- ESO/VLT/UT3 visitor mode, HiRISE, two full nights 04/2024
- Cerro Tololo visitor mode, 0.6m telescope, two full nights 05/2023

Data reduction

- *EsoReflex* and *TExTRIS* to extract the spectra of VLT/SINFONI observations ([Palma-Bifani et al. 2025](#)).

Open-source developments

Software & community leadership

- **Founder, *exoAtmospheres*** (github.com/exoAtmospheres):

A collaborative organization for hosting exoplanetary analysis related tools.

Public repositories:

- *ForMoSA*: Forward modeling tool for spectral analysis.
- *exoSpin*: A python code to measure planetary obliquities.

Private repositories (expected to be public in 2026):

- *MicadoRoutines*: Code to estimate the performance of the ELT/MICADO LSS mode.
- *DetectionLimits*: Code to compute detection limits from contrast to mass for different instruments.
- *Optex*: Code to perform atmospheric retrievals based on optimal estimation.

- **Co-founder, *Science & Commit*** (github.com/Science-and-Commit):

Workshop on releasing, documenting, and maintaining scientific Python packages.

Technical expertise

- **git & GitHub** (github.com/Palma-Bifani)

Developed *GitExpress*, a quick git guide to get started.

- **Python**: numpy, Astropy, SciPy, Pandas, Xarray, Matplotlib, Species, PyMultiNest, petitRADTRANS, orbitize!, pyOptimalEstimation, and Exo_k.
- **Other languages & tools**: $\LaTeX$, HTML, Matlab, QFitsView, Microsoft office, and Anaconda.

Grants & awards

- **Project: *Science & Commit*** (\$1,500,000 CLP) 04/2021–03/2022
Support for academic projects by graduate students, Dep. de Postgrado y Postítulo, Univ. de Chile

Languages

Spanish: Native

English: Fluent

German: Advance

French: Intermediate

Italian: Basic