

Bibiana Prinoth

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Education

- 2020 –  **Ph.D. in Astronomy & Astrophysics, Lund University & European Southern Observatory**
Thesis title: *Comparative Transmission Spectroscopy of Hot Exoplanet Atmospheres*
Advisors: H. Jens Hoeijmakers (LU), Elyar Sedaghati (ESO) & Julia V. Seidel (ESO)
ESO Studentship in Santiago, Aug 2023 - Jul 2024
- 2018 – 2020  **M.Sc. ETH in Physics, ETH Zürich**
Thesis title: *Detectability of Radial Velocity Planets with ELT / METIS*
Advisor: Sascha Quanz
- 2015 – 2019  **B.Sc. ETH in Physics, ETH Zürich**
Thesis title¹: *An Attempt to Calculate the Disc Fractional Polarisation of HD 142169.*
Advisor: Hans-Martin Schmid

Research Publications

First-authored

- 1 **B. Prinoth**, H. J. Hoeijmakers, B. M. Morris, M. Lam, *et al.*, “An atlas of resolved spectral features in the transmission spectrum of WASP-189 b with MAROON-X,” *Astronomy & Astrophysics*, 2024. [DOI: 10.1051/0004-6361/202349125](https://doi.org/10.1051/0004-6361/202349125).
- 2 **B. Prinoth**, E. Sedaghati, J. V. Seidel, H. J. Hoeijmakers, *et al.*, “High-resolution transmission spectroscopy of warm Jupiters: An ESPRESSO sample with predictions for ANDES,” *AJ*, 2024. [DOI: 10.3847/1538-3881/ad5a7f](https://doi.org/10.3847/1538-3881/ad5a7f).
- 3 **B. Prinoth**, H. J. Hoeijmakers, S. Pelletier, D. Kitzmann, *et al.*, “Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b,” *Astronomy and Astrophysics*, vol. 678, A182, 2023, ISSN: 0004-6361. [DOI: 10.1051/0004-6361/202347262](https://doi.org/10.1051/0004-6361/202347262).
- 4 Seidel, J. V. & **Prinoth, B.**, E. Knudstrup, H. J. Hoeijmakers, J. J. Zanazzi, and S. Albrecht, “Detection of atmospheric species and dynamics in the bloated hot Jupiter WASP-172 b with ESPRESSO,” *Astronomy and Astrophysics*, vol. 678, A150, 2023, ISSN: 0004-6361. [DOI: 10.1051/0004-6361/202347160](https://doi.org/10.1051/0004-6361/202347160).
- 5 **B. Prinoth**, H. J. Hoeijmakers, D. Kitzmann, E. Sandvik, *et al.*, “Titanium oxide and chemical inhomogeneity in the atmosphere of the exoplanet WASP-189 b,” *Nature Astronomy*, 2022. [DOI: 10.1038/s41550-021-01581-z](https://doi.org/10.1038/s41550-021-01581-z).

Co-authored

- 1 M. B. Lam, H. J. Hoeijmakers, **B. Prinoth**, and B. Thorsbro, “Secrets in the shadow: High precision stellar abundances of fast-rotating A-type exoplanet host stars through transit spectroscopy,” under review.
- 2 E. Ahrer, J. V. Seidel, L. Doyle, S. Gandhi, *et al.*, “Atmospheric characterization and tighter constraints on the orbital misalignment of WASP-94 A b with HARPS,” *MNRAS*, 2024. [DOI: 10.1093/mnras/stae1000](https://doi.org/10.1093/mnras/stae1000).
- 3 N. W. Borsato, H. J. Hoeijmakers, D. Cont, D. Kitzmann, *et al.*, “Small but mighty: High-resolution spectroscopy of ultra-hot Jupiter atmospheres with compact telescopes. Transmission spectrum of KELT-9 b with Wendelstein’s FOCES spectrograph,” *Astronomy & Astrophysics*, 2024. [DOI: 10.1051/0004-6361/202347684](https://doi.org/10.1051/0004-6361/202347684).
- 4 Y. C. Damasceno, J. V. Seidel, **B. Prinoth**, A. Psaridi, *et al.*, “The atmospheric composition of the ultra-hot Jupiter WASP-178 b observed with ESPRESSO,” Jun. 2024. [DOI: 10.48550/arXiv.2406.08348](https://doi.org/10.48550/arXiv.2406.08348).
- 5 N. W. B. Borsato, H. J. Hoeijmakers, **B. Prinoth**, B. Thorsbro, *et al.*, “The Mantis Network. III. Expanding the limits of chemical searches within ultra-hot Jupiters: New detections of Ca I, VI, Ti I, Cr I, Ni I, Sr II, Ba II, and Tb II in KELT-9 b,” *Astronomy & Astrophysics*, 2023. [DOI: 10.1051/0004-6361/202245121](https://doi.org/10.1051/0004-6361/202245121).
- 6 D. Kitzmann, H. J. Hoeijmakers, S. L. Grimm, N. W. Borsato, A. Lueber, and **B. Prinoth**, “The Mantis Network I. A standard grid of templates and masks for cross-correlation analyses of ultra-hot Jupiter transmission spectra,” *Astronomy & Astrophysics*, 2023. [DOI: 10.1051/0004-6361/202142969](https://doi.org/10.1051/0004-6361/202142969).
- 7 S. Pelletier, B. Benneke, M. Ali-Dib, **B. Prinoth**, *et al.*, “Vanadium oxide and a sharp onset of cold-trapping on a giant exoplanet,” *Nature*, 2023. [DOI: 10.1038/s41586-023-06134-0](https://doi.org/10.1038/s41586-023-06134-0).

¹At ETH Zurich there is no Bachelor’s thesis in physics, but a semester project (9 ECTS).

- 8 H. J. Hoeijmakers, D. Kitzmann, B. M. Morris, **B. Prinoth**, *et al.*, “The Mantis Network IV: A titanium cold-trap on the ultra-hot Jupiter WASP-121 b,” *arXiv e-prints*, 2022. [DOI: 10.48550/arXiv.2210.12847](https://doi.org/10.48550/arXiv.2210.12847).
- 9 E. K. H. Lee, **B. Prinoth**, D. Kitzmann, S.-M. Tsai, *et al.*, “The Mantis Network II: Examining the 3D high-resolution observable properties of the UHJs WASP-121b and WASP-189b through GCM modelling,” *MNRAS*, 2022. [DOI: 10.1093/mnras/stac2246](https://doi.org/10.1093/mnras/stac2246).
- 10 E. K. H. Lee, J. P. Wardenier, **B. Prinoth**, V. Parmentier, *et al.*, “3D Radiative Transfer for Exoplanet Atmospheres. gCMCRT: A GPU-accelerated MCRT Code,” *The Astrophysical Journal*, 2022. [DOI: 10.3847/1538-4357/ac61d6](https://doi.org/10.3847/1538-4357/ac61d6).

Seminars, Talks and Presentations

- 2024 - upcoming
- ◇ **Cross-correlation challenges in the ANDES era: Observing warm Jupiters on eccentric orbits**
Two HoRSEs: High-Resolution Exoplanet and Stellar Characterization Today and in the ELT Era, Berlin, Germany, July 15-19, 2024 (contributed talk)
<https://sites.google.com/view/two-horses/>
 - ◇ **Revealing the Formation History of Ultra-Hot Jupiters through Refractory-to-Volatile Elemental Ratios: Benchmarking with WASP-189 b**
Challenge Accepted: Linking Planet Formation with Present-Day Atmospheres, Heidelberg, Germany, July 8-12, 2024 (contributed talk)
<https://the-great-link.github.io/>
 - ◇ **Cross-correlation challenges in the ANDES era: Observing warm Jupiters on eccentric orbits**
ESO Seminar, ESO Garching, Germany, June 11, 2024
 - ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
Exoplanets 5, Leiden, Netherlands, June 17-21, 2024 (poster presentation)
<https://exoplanets5.org/>
- 2024
- ◇ **Exploring the Limits of Atmospheric Studies on Warm Jupiters: The Role of System Architectures**
Seminar at Universidad Adolfo Ibañez, Santiago, Chile, April 17, 2024
 - ◇ **Exploring Extreme Worlds: Insights on Ultra-hot Jupiters from WASP-189 b**
Astro Seminar, American Museum of Natural History, New York, April 9, 2024
 - ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
Extreme Solar Systems V, Christchurch, New Zealand, March 16-21, 2024 (poster presentation)
<https://aas.org/meetings/exssv>
 - ◇ **Exploring Extreme Worlds: Insights on Ultra-hot Jupiters from WASP-189 b**
MQAAAstro Seminar, Macquarie University, Sydney, Australia, March 15, 2024
 - ◇ **Exploring Extreme Worlds: Insights on Ultra-hot Jupiters from WASP-189 b**
Astro Seminar, University of New South Wales, Sydney, Australia, March 13, 2024
- 2023
- ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
OPAGA, Puerto Natales, December 4 - 8, 2023 (contributed talk)
<https://astrofiscamas.cl/opaga/>
 - ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
Seminar at Universidad Adolfo Ibañez, Santiago, Chile, October 24, 2023
 - ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
Thirty-Minutes-Talk ESO Chile, October 18, 2023
 - ◇ **Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b**
DPS-EPSC, October 1-6, 2023 (remote attendance, contributed talk)
<https://aas.org/meetings/dps55>
 - ◇ **Exploring the atmosphere of the ultra-hot Jupiter WASP-189 b**
Stockholm University Astronomy Departmental Seminar, June 2, 2023
<https://www.albanova.se/event/astronomy-departmental-seminar-bibiana-prinoth-lund/>
 - ◇ **Through the telescope: Exploring the atmosphere of the ultra-hot Jupiter WASP-189 b**
SPI-MAX Astrophysics Seminar, May 10, 2023
<https://www.physics.ox.ac.uk/events/spi-max-bibiana-prinoth>
 - ◇ **Exploring the atmosphere of the ultra-hot Jupiter WASP-189 b**
Helsinki Astrophysics Seminar, March 2023 (online)
<https://wiki.helsinki.fi/display/astjourn/Astrophysics+seminar>
- 2022
- ◇ **What else is there to see? Revisiting the transmission spectrum of WASP-189 b**
Astronomdagarna, Oct 4-6, 2022 (contributed talk)
 - ◇ **Titanium oxide and chemical inhomogeneity in the atmosphere of WASP-189 b**
EAS 2022, Jun 27 - Jul 2, 2022 (poster presentation)

Seminars, Talks and Presentations (continued)

- ◇ **Titanium oxide and chemical inhomogeneity in the atmosphere of WASP-189 b**
Exoplanets IV, May 1-6, 2022 (poster presentation)
- ◇ **Revealing dynamics, atmospheric stratification and chemical inhomogeneities in the atmosphere of WASP-189 b**
Uppsala University Astronomy/Space physics seminar in February 2022 (invited seminar)
- 2021 ◇ **Revealing Dynamics, Three-Dimensional Stratification, and Chemical Inhomogeneities in the Atmosphere of an Ultra-Hot Jupiter**
Astronomdagarna, Oct 22-23, 2021 (contributed talk)
<https://indico.cern.ch/event/1016890/contributions/4498334/>
- ◇ **Interpreting Detections of Metals in the Transmission Spectra of Ultra-hot Jupiters**
ESO Atmospheres Conference & Workshop, Aug 23-27, 2021 (contributed talk)
<https://eso.org/sci/meetings/2021/Atmo2021/program/Prinoth.html>

Observational Experience and Proposals

- 2023 ◇ **JWST Cycle 2**
Constraining the Oxidation State of the Super-Earth TOI-1685 b, ID #4195, PI: Fisher
TOI-125: Comparative Atmospheric Chemistry Within One System, ID #4126, PI: Fisher
Hot Jupiter Atmospheric Forecast: are mornings cloudier than evenings in other worlds?, ID #3969, PIs: Espinoza, Powell
The Hot Rocks Survey: Testing 9 Irradiated Terrestrial Exoplanets for Atmospheres, ID #3730, PI: Diamond-Lowe, Mendonça
Calibrating NIRISS order 3 for very bright time-series observations with JWST, ID #3279, PI: Hoeijmakers
- ◇ **HRS @ the Southern African Large Telescope**
Transit in Service Mode (SM) during semester 23B, PI: Prinoth
- 2022 ◇ **HRS @ the Southern African Large Telescope**
Transit in Service Mode (SM) during semester 23A, PI: Prinoth
- ◇ **HRS @ the Southern African Large Telescope**
Transit in Service Mode (SM) during semester 22B, PI: Prinoth
- ◇ **FIES @ the Nordic Optical Telescope**
Two transit observations in designated Visitor Mode (dVM) during semester 22B, PI: Johansen
- 2021 ◇ **ESPRESSO the Very Large Telescope**
Transit observation in designated Visitor Mode (dVM) during SC107, PI: Prinoth, PID: 107.22QF
- ◇ **FIES @ the Nordic Optical Telescope**
Two transit observations in Visitor Mode (VM) during semester 21B, PI: Johansen






Awards and Grants

- 2022 ◇ **Research Grant**
Royal Physiographic Society of Lund, Walter Gyllenberg Foundation (SEK 56,063)
- ◇ **Seminar Grant**
Royal Physiographic Society of Lund, Gunnar & Gunnel Källén's Memorial Fund (SEK 50,000)
- 2021 ◇ **Research Grant**
Royal Physiographic Society of Lund, Walter Gyllenberg Foundation (SEK 100,000)
- 2020 ◇ **Research Grant**
Royal Physiographic Society of Lund, Walter Gyllenberg Foundation (SEK 105,000)
- ◇ **VMP Assistentenaward: Award for excellent teaching**
Association of mathematics and physics students at ETH Zürich (VMP)












Work Experience and Teaching

- 2024 – present ◇ **Reviewer**
*Monthly Notices of the Royal Astronomical Society, Journal of Emerging Investigators **
- 2022 – present ◇ **Teaching assistant in ASTBo1 - Introduction to Astrophysics**
Department for Astronomy and Theoretical Physics, Lund University
- 2022 ◇ **Social Media Internship at the Europlanet Science Congress**
Europlanet Science Congress in Granada, Spain, Sep 18 – 23, 2022





Work Experience and Teaching (continued)

- 2021 – 2023  **Teaching assistant in FYSB21 - Mathematical Methods for Waves, Vibrations and Diffusion**
Department for Astronomy and Theoretical Physics, Lund University, Apr 2021 – Jul 2021, Nov 2021 – Jan 2022, Apr 2022 – Jul 2022, Nov 2022 – Jan 2023
- 2020 – present  **Teaching assistant in ASTCo1 - Astrobiology**
Department for Astronomy and Theoretical Physics, Lund University
- 2020  **Teaching assistant in Physics II**
Institute for Particle Physics and Astrophysics, Department of Physics, ETH Zürich, Feb – Aug 2020
- 2018 – 2020  **Teaching assistant in Physics I & II**
Institute for Particle Physics and Astrophysics, Department of Physics, ETH Zürich, Sep 2018 – Jan 2020
- 2015 – 2016  **Substitute Teacher in Mathematics**
Kantonsschule Sargans (Gymnasium), Switzerland, Sep 21 – 25, 2015 / Feb 15 – 19, 2016


Voluntary Work and Student Representation

- 2024  **Co-organiser of the Python Coffee Series**
European Southern Observatory, Chile, Jan 2024 – present
- 2022  **Main Organiser and Host of the Källén Seminars for Young Astronomers**
Lund Observatory, Jan 2022 – Dec 2022
-  **Founding Member of SENECA — The Swedish Network for Early Career Astronomers**
<https://seneca-astro.github.io>
- 2022 – 2023  **NDR Working Committee Member**
Naturvetenskapliga Doktorandrådet (NDR), Jul 2022 – Jun 2023
- 2021 – 2024  **PhD representative in the Research Education Board**
Naturvetenskapliga Doktorandrådet (NDR), Jan 2021 – June 2023
- 2021 – 2022  **NDR Chair**
Naturvetenskapliga Doktorandrådet (NDR), Jul 2021 – Jun 2022
- 2018 – 2020  **Co-Secretary General of IDEALiStiC**
IDEA League Students in Conference, Feb 2018 – Oct 2020
- 2018 – 2019  **President of the Council for Student Associations**
Verband der Studierenden an der ETH Zürich, Sep 2018 - Feb 2019
- 2017 – 2018  **Board member for communication at VSETH**
Verband der Studierenden an der ETH Zürich, Sep 2017 - Mar 2018
- 2016 – 2017  **President of VMP**
Verein der Mathematik- und Physikstudierenden an der ETH Zürich, Oct 2016 - Oct 2017
- 2015 – 2016  **Founding member and president of [phimale]**
Verein der Mathematik- und Physikstudierenden an der ETH Zürich, Oct 2015 - Oct 2016

Outreach Activities

- 2023  **Knut Lundmark-dagarna Lund University**
Lectures about exoplanets for high-school students organised by Astronomisk Ungdom
<https://www.astronomiskungdom.se/knut-lundmark-dagarna>
-  **Monthly meeting of ASTB Lund University**
"Genom teleskopet: utforskning av andra världars atmosfärer", talk for the monthly meeting of the astronomiska sällskap Tycho Brahe
<https://www.astb.se/index.php/aktiviteter/m-och-frag-mainmenu-38/600-utforskningen-av-andra-varldars-atmosfarer>
-  **NMT Days Lund University**
Lectures about exoplanets for high-school students during the NMT (naturvetenskap, medicin, teknik) days at Lund University
<https://www.nmt.lu.se/app/?nav>
- 2022  **ALVA Lund University**
Outreach talk to the astronomy club at Lund University about "The planets beyond our solar system"
<https://www.astro.lu.se/ALVA>

Outreach Activities (continued)

-  **The Interplanetary Podcast**
Guest on a podcast, talking about Ultra-hot Jupiters
<https://www.interplanetary.org.uk/>
-  **NMT Days Lund University**
Lectures about exoplanets for high-school students during the NMT (naturvetenskap, medicin, teknik) days at Lund University
<https://www.nmt.lu.se/app/?nav>
- 2021  **The Meridian Podcast**
Field reporter on the podcast of Lund Observatory during season 2
<https://www.astro.lu.se/TheMeridian>
-  **Outreach Talk Polhemskola, Lund**
Invited talk at a high school in Lund
<https://www.astro.lu.se/TheMeridian>
- 2021 – present  **Skype A Scientist**
Talks to several school classes
<https://www.skypeascientist.com/>
- 2020 – present  **Outreach activities at the telescope**
Visits to our telescopes with school classes and interested groups, public observing