

Bibiana Prinoth

PhD Student in Astronomy & Astrophysics at Lund University

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🐦 @bibianaprinoth



<http://bprinoth.github.io/>



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bprinoth







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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**, E. Sedaghati, V. S. J., H. J. Hoeijmakers, *et al.*, *High-resolution transmission spectroscopy of warm Jupiters: An ESPRESSO sample with predictions for ANDES*, under review.
- 2 **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*, 2024.  DOI: 10.48550/arXiv.2403.08863.
- 3 **B. Prinoth**, H. J. Hoeijmakers, S. Pelletier, D. Kitzmann, *et al.*, *Time-resolved transmission spectroscopy of the ultra-hot Jupiter WASP-189 b*, 2023.  DOI: 10.1051/0004-6361/202347262.
- 4 Seidel, J. V. & **Prinoth, B.**, E. Knudstrup, H. J. Hoeijmakers, J. J. Zanzizzi, and S. Albrecht, *Detection of atmospheric species and dynamics in the bloated hot Jupiter WASP-172 b with ESPRESSO*, 2023.  DOI: 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*, 2022.  DOI: 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.
- 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.
- 4 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.
- 5 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.
- 6 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.
- 7 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.

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

- 8 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.
- 9 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.

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 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 Ibáñez, 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)
 - ◇ **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)

Seminars, Talks and Presentations (continued)

- 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
- 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

Work Experience and Teaching (continued)

- 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://bprinoth.github.io/seneca/>
- 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

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>
- 🌐 **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>

Outreach Activities (continued)

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|----------------|---|--|
| 2021 |  | The Meridian Podcast
<i>Field reporter on the podcast of Lund Observatory during season 2</i>
https://www.astro.lu.se/TheMeridian |
| |  | Outreach Talk Polhemskola, Lund
<i>Invited talk at a high school in Lund</i>
https://www.astro.lu.se/TheMeridian |
| 2021 – present |  | Skype A Scientist
<i>Talks to several school classes</i>
https://www.skypeascientist.com/ |
| 2020 – present |  | Outreach activities at the telescope
<i>Visits to our telescopes with school classes and interested groups, public observing</i> |