

# Sebastian Zieba

## Curriculum Vitae

✉ [zieba@mpia.de](mailto:zieba@mpia.de)  
ID 0000-0003-0562-6750

🌐 [sebastian-zieba](https://sebastian-zieba.github.io)  
Website: [sebastian-zieba.github.io](https://sebastian-zieba.github.io)

## Education

- 2013 – 2017 **Bachelor Physics**, *Leopold Franzens University*, Innsbruck, Austria.  
Thesis: *The Titius Bode law - applied on exoplanetary systems*  
Supervisor: Univ.-Prof. Dr. Norbert Przybilla
- 2017 – 2020 **Master Physics**, *Leopold Franzens University*, Innsbruck, Austria.  
Thesis: *Time delay analysis of the  $\delta$  Scuti pulsations in the exoplanet host star  $\beta$  Pictoris based on space and ground-based photometry*  
Supervisor: Univ.-Prof. Mag. Dr. Konstanze Zwintz  
Co-Supervisor: Associate Professor Dr. M.A. Matthew Kenworthy
- 2020 – **PhD**, *Max-Planck Institute for Astronomy (APEX Department)*, Heidelberg, Germany & *Leiden Observatory*, Leiden, Netherlands  
present  
Supervisor: Prof. Dr. Laura Kreidberg  
Promotor: Prof. Dr. Ignas A.G. Snellen

## First-author Publications

- **Zieba, S.**, Zwintz, K. Kenworthy, M., et al., "The  $\beta$  Pictoris b Hill Sphere Transit Campaign II. Searching for the signatures of the  $\beta$  Pictoris exoplanets through time delay analysis of the  $\delta$  Scuti pulsations", (submitted)
- **Zieba, S.**, Kreidberg, L., Ducrot, E., et al., "No thick carbon dioxide atmosphere on the rocky exoplanet TRAPPIST-1 c", *Nature*, 620, 746 (2023)
- **Zieba, S.**, and Kreidberg, L., et al., "PACMAN: A pipeline to reduce and analyze Hubble Wide Field Camera 3 IF Grism data", *JOSS*, 7, 4838 (2022)
- **Zieba, S.**, Zilinskas, M., Kreidberg, L., et al., "K2 and Spitzer phase curves of the rocky ultra-short-period planet K2-141 b hint at a tenuous rock vapor atmosphere", *A&A*, 664, A79 (2022)
- **Zieba, S.**, Zwintz, K. Kenworthy, M. A. Kennedy, G. M., "Transiting exocomets detected in broadband light by TESS in the  $\beta$  Pictoris system", *A&A*, 625, L13 (2019)

## Co-author Publications (selection)

- Lincowski, A. P., Meadows, V. S., **Zieba, S.**, et al., "Potential Atmospheric Compositions of TRAPPIST-1 c constrained by JWST/MIRI Observations at 15 microns", *ApJL*, 955, L7 (2023)
- Ahrer, E.-M., Stevenson, K. B., Mansfield, M., et al. [including **Zieba, S.**], "Early Release Science of the exoplanet WASP-39b with JWST NIRC2", *Nature*, 614, 653 (2023)
- Rebollido, I., **Zieba, S.**, Iglesias, D., et al., "CHEOPS's hunt for exocomets: photometric observations of 5 Vul", *MNRAS*, 523, 1441 (2023)

- Bell, T. J., Brande, J., Ahner, E., et. al. [including **Zieba, S.**], "Eureka!: An End-to-End Pipeline for JWST Time-Series Observations", submitted to JOSS (2022)
- Zilinskas M., van Buchem C., Miguel Y., et al. [including **Zieba, S.**], "Observability of evaporating lava worlds", A&A 661, A126 (2022)
- Strøm, P., Bodewits, D., Knight, M., et. al. [including **Zieba, S.**], "Exocomets from a Solar System Perspective", PASP, 132, 101001 (2020)
- Rodriguez, J. E., Vanderburg, A., **Zieba, S.**, et al., "The First Habitable Zone Earth-Sized Planet From TESS II: *Spitzer* Confirms TOI-700 d", AJ, 160, 117 (2020)
- Zwintz, K., Reese, D. R., Neiner, C. et al. [including **Zieba, S.**], "Revisiting the pulsational characteristics of the exoplanet host star  $\beta$  Pictoris", A&A 627, A28 (2019)

## Awards

- 2019 *Student Poster Competition Winner* at TESS Science Conference I
- 2019 Studienförderungspreis 2019 des Deutschen Freundeskreises der Universitäten in Innsbruck e.V.

## Accepted observing proposals (as PI)

- 2023 JWST Cycle 2 PROGRAM: *Exploring the boundary between rocky and gaseous planets with WASP-47 e.*
- 2023 JWST Cycle 2 PROGRAM: *The search for regolith on the airless exoplanet LHS 3844 b.*

## Accepted observing proposals (as co-PI)

- 2022 HST Cycle 29 PROGRAM: *Inside out: detecting a rock vapor atmosphere on the lava world TOI-2431 b.*

## Accepted observing proposals (as Co-I, selection)

- 2023 JWST Cycle 2 PROGRAM: *TRAPPIST-1 Planets: Atmospheres Or Not?*
- 2021 JWST Cycle 1 PROGRAM: *A Hell of a Phase Curve: Mapping the Surface and Atmosphere of a Lava Planet K2-141b.*
- 2019 CHEOPS AO-1 PROGRAM: *Hunting for exocomets transiting the young naked-eye star 5 Vulpeculae.*

## Attendance at Conferences, Workshops and Summer Schools (selection)

- May 2019 Workshop: *ExoComets: Understanding the Composition of Planetary Building Blocks*, Leiden, Netherlands
- July - Aug 2019 Conference: *TESS Science Conference I*, Boston, USA (Contribution: Poster)
- March 2021 Workshop: *Exoplanet atmosphere characterization: from HST and Spitzer to JWST*, online (Contribution: Talk)
- Sept 2021 Conference: *Europlanet Science Congress (EPSC)*, online (Contribution: Talk)
- May 2022 Conference: *Exoplanets IV*, Las Vegas, USA (Contribution: Poster)

- July 2022 Conference: *Rocky Worlds 2*, Oxford, UK (Contribution: Talk)
- Sep 2022 Workshop: *Diversity of Rocky Planets 2022*, Leiden, Netherlands
- June 2023 Conference: *Exoclimes VI*, Exeter, UK (Contribution: Talk)
- July 2023 Workshop: *2023 Sagan Exoplanet Summer Hybrid Workshop Characterizing Exoplanet Atmospheres: The Next Twenty Years*, Pasadena, USA

## Given Talks

- 2019 TESS Science Conference I  
**Student Poster Competition Winner Talk: Transiting exocomets detected in broadband light by TESS in the  $\beta$  Pictoris system**  
 Video Link: <https://youtu.be/KTRbjX1jTuI>
- 2021 Exoplanet atmosphere characterization: from HST and Spitzer to JWST  
**Optical and Infrared Phase Curves of the Lava Planet K2-141 b**  
 Video Link: <https://vimeo.com/523742466/4644d3e974>
- 2021 Europlanet Science Congress (EPSC)  
**Optical and Infrared Phase Curves of the Lava Planet K2-141 b**  
 Video Link: <https://vimeo.com/596172827>
- 2022 Rocky Worlds 2  
**K2 and Spitzer phase curves of the rocky ultra-short-period planet K2-141 b hint at a tenuous rock vapor atmosphere**
- 2022 CEHW Seminar at Penn State University  
**Atmospheres of lava planets: a case study for K2-141 b**
- 2023 Exoclimes VI  
**Detection of thermal emission from TRAPPIST-1 c with JWST**
- 2023 JPL Astrophysics Colloquium  
**The Frontier of Rocky Planet Characterization**

## Teaching Experience

- May 2018 Substitute Lecturer for Univ.-Prof. Mag. Dr. Paul Scheier  
 Topic: Introduction to exoplanets
- Jan 2019 Substitute Lecturer for Univ.-Prof. Mag. Dr. Konstanze Zwintz  
 Topic: Introduction to exoplanets
- May 2019 Substitute Lecturer for Univ.-Prof. Mag. Dr. Konstanze Zwintz  
 Topic: Telescopes in Space: Kepler and TESS

## Public Outreach Talks

- 2011 Science Day at the *Salzburg University of Education Stefan Zweig*  
**Talk: Planetology of the Moon and Mars as seen with *Google Maps***
- 2012 Science Day at the *Salzburg University of Education Stefan Zweig*  
**Talk: How do you find an exoplanet?**
- 2013 Science Day at the *Salzburg University of Education Stefan Zweig*  
**Talk: Exoplanets - The search for the second Earth**
- 2013 Astronomical Society of Salzburg  
**Talk: Exoplanets**
- 2022 Private grammar school St. Rupert in Salzburg  
**Talk: Exoplanets and the first results from JWST**