Sebastian Zieba

Curriculum Vitae

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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 δ Scuti pulsations in the exoplanet host star β 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 – present **PhD**, *Max-Planck Institute for Astronomy (APEx Department)*, Heidelberg, Germany & *Leiden Observatory*, Leiden, Netherlands
Supervisor: Prof. Dr. Laura Kreidberg
Promotor: Prof. Dr. Ignas A.G. Snellen

First-author Publications

- **Zieba, S.**, Zwintz, K. Kenworthy, M., et al., "The β Pictoris b Hill Sphere Transit Campaign II. Searching for the signatures of the β Pictoris exoplanets through time delay analysis of the δ 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 β 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 NIRCam", 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., Ahrer, 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 β 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 β 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