Simon Schleich

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Research Interest

Exoplanet atmospheric retrieval, data reduction of exoplanet observations, star-planet interactions and co-evolution, habitability.

Education

PhD (Dr. rer. nat., Astronomy) 2022 – present
University of Vienna, *Vienna, Austria*

MSc (Master of Science, Astronomy) 2019 – 2022
University of Vienna, *Vienna, Austria*
Graduated with Distinction

BSc (Bachelor of Science, Astronomy) 2016 – 2019
University of Vienna, *Vienna, Austria*

Research Experience

PhD project, University of Vienna 10 / 2022 – ongoing
Thesis title: *Towards another Earth: Characterising exoplanet atmospheres in the era of JWST*
Characterising exoplanet atmospheres from JWST observations. End-to-end data reduction and application of atmospheric retrieval techniques, with a focus on NIR transmission spectroscopy.

MSc project, University of Vienna 10 / 2020 – 01 / 2022
Thesis title: *Stellar wind simulations in the age of PSP and Solar Orbiter*
Investigated the properties of the solar wind using both numerical simulations and observation. The project included (1) implementation of a WTD heating mechanism into the 3D MHD code NIRVANA (*code development*), and (2) data analysis of PSP and SolO measurements. Results have been published in Schleich et al. (2023).

Publications

Schleich, S., Boro Saikia, S., Changeat, Q., Güdel, M., Voigt, A. and Waldmann, I. (2025). *Knobs and dials of retrieving JWST transmission spectra. II. Impacts of pipeline-level differences on retrieval posteriors.* Accepted for publication in A&A, arXiv preprint.

Van Looveren, G., Boro Saikia, S., Herbort, O., **Schleich, S.**, Güdel, M., Johnstone, C. and Kislyakova, K. (2025). *Habitable Zone and Atmosphere Retention Distance (HaZARD): Stellar-evolution-dependent loss models of secondary atmospheres.* A&A, 694, A310.

Schleich, S., Boro Saikia, S., Changeat, Q., Güdel, M., Voigt, A. and Waldmann, I. (2024). *Knobs and dials of retrieving JWST transmission spectra: I. The importance of p–T profile complexity.* A&A, 690, A336.

Schleich, S., Boro Saikia, S., Ziegler, U., Güdel, M. and Bartel, M. (2023). *NIRwave: A wave-turbulence-driven solar wind model constrained by PSP observations.* A&A, 672, A64.

Other Work

Scientific contribution: Poster 2025
Sensitivity in atmospheric retrievals of JWST hot Jupiter transmission spectra.
European Astronomical Society (EAS) meeting, Cork, Ireland

Scientific contribution: Talk 2024
Retrieving pressure-temperature profiles from exoplanet transmission spectra.
Ariel Consortium Meeting, Lisbon, Portugal

SOC member: Wienerwald Astronomy Symposium 2024

Joint symposium between the Department of Astrophysics at the University of Vienna and the Astronomy Research Groups at the Institute for Science and Technology Austria (ISTA).

Scientific contribution: Poster 2024
Influences of data processing techniques on the interpretation of atmospheric spectra from JWST. *Exoplanets 5, Leiden, The Netherlands*.

Scientific contribution: Talk 2024
Influences of data processing techniques on the interpretation of atmospheric spectra from JWST. *Austrian Early Career Conference, Salzburg, Austria*

Co-organiser: Big Picture Talks and Events 2023
[Big Picture Talk] Graveyard of Space Technology with approximately 100 participants (online and in-person)

Scientific contribution: Poster 2023
NIRwave: A wave-turbulence-driven solar wind model constrained by Parker Solar Probe observations. *Planet ESLAB 2023, Leiden, The Netherlands*. DOI: 10.5281/zenodo.7761620

Outreach

Speaker: Nights at the observatory (*Nachts auf der Sternwarte*) 2025
The sun, moon, and stars: Astronomy as a science and inspiration for music (*Sonne, Mond und Stenre: Astronomie als Wissenschaft und Inspiration in der Musik*, held in German). A recording is available here.

Speaker: Nights at the observatory (*Nachts auf der Sternwarte*) 2025
New horizons on extrasolar planets (*Neue Horizonte auf extrasolaren Planeten*, held in German). A recording is available here.

Speaker: Long Night of Research (*Lange Nacht der Forschung*) 2024
Observing exoplanets with space telescopes (*Beobachtungen von Exoplaneten mit Weltraumteleskopen*, held in German).

Grants

Grant for Early-stage Researcher - University of Vienna 2025
Granted for a poster contribution to EAS 2025

Grant for Early-stage Researcher - University of Vienna 2024
Granted for a poster contribution to Exoplanets 5

”International Communications” - Austrian Research Federation (ÖFG) 2023
Granted for a short-term research visit to the ESA office at STScI, Baltimore

”Short-term research stay abroad (KWA)” - University of Vienna 2023
Granted for a short-term research visit to the ESA office at STScI, Baltimore

Grant for Early-stage Researcher - University of Vienna 2023
Granted for a poster contribution to PLANET ESLAB 2023

Skills

Programming
Python (experienced) | C (familiar) | HPC (Slurm Workload Manager)

Software and Tools
Eureka! (JWST data reduction) | TauREx3 (atmospheric retrieval) | LaTeX | ParaView

Languages

German (*Native*) | English (*Fluent*)