

Martin Schlecker

POSTDOCTORAL RESEARCHER · EXOPLANETEER · OPEN SCIENCE ENTHUSIAST

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Education and Experience

Postdoctoral Researcher

[Tucson, AZ, USA](#)

UNIVERSITY OF ARIZONA

since 2022

Study planetary habitability in the context of planet formation and exoplanet demographics
Inform next-generation exoplanet missions via statistical hypothesis testing
Contribute to a scalable solution for atmospheric CO₂ removal

PhD (Dr. rer. nat.) in Astronomy

[Heidelberg, Germany](#)

MAX PLANCK INSTITUTE FOR ASTRONOMY/UNIVERSITY OF HEIDELBERG

2017 – 2021

Thesis: *The Architectures of Planetary Systems: Population Synthesis Meets Observations*
Advisors: Thomas Henning, Hubert Klahr
Fellow of the International Max Planck Research School (IMPRS) for Astronomy and Cosmic Physics

Master of Science (MSc) in Nuclear, Particle and Astrophysics

[Munich, Germany](#)

TECHNICAL UNIVERSITY OF MUNICH

2013 – 2017

Thesis @European Southern Observatory (ESO): *Irregular Variability in Kepler Photometry*
Discovered and characterized a new exoplanet candidate

Bachelor of Science (BSc) in Physics

[Munich, Germany](#)

TECHNICAL UNIVERSITY OF MUNICH

2010 – 2013

Thesis @Max-Planck Institute for Extraterrestrial Physics: *Alignment and Calibration of the X-Ray Telescope μ ROS*

Selected Presentations

ISM Seminar

[University of Groningen](#)

INVITED SEMINAR

Jul. 2023

Institutsseminar

[DLR Berlin](#)

INVITED COLLOQUIUM

Jul. 2023

Origins Seminar

[University of Arizona](#)

INVITED SEMINAR

May 2023

AstroBio23: Oxygen in Planetary Biospheres

[Green Bank Observatory](#)

CONTRIBUTED CONFERENCE TALK

May 2023

ET Science Seminar Series

[Shanghai Astronomical Observatory \(virtual\)](#)

INVITED SEMINAR

Jan. 2023

Forming and Exploring Habitable Worlds

[University of Edinburgh](#)

CONTRIBUTED CONFERENCE TALK

Nov. 2022

JPL Astrophysics Luncheon Seminar

[NASA JPL \(virtual\)](#)

INVITED SEMINAR

Apr. 2022

ESO workshop: The Star-Planet Connection

[Santiago de Chile \(virtual\)](#)

CONTRIBUTED CONFERENCE TALK

Oct. 2021

Königstuhl Colloquium

[MPIA \(virtual\)](#)

INVITED COLLOQUIUM

Jun. 2021

MIT Exoplanet Tea

[MIT Kavli Institute \(virtual\)](#)

INVITED SEMINAR

Nov. 2020

Exoplanet Demographics Conference

[NExSci, IPAC/Caltech \(virtual\)](#)

CONTRIBUTED CONFERENCE TALK

Nov. 2020

CfA Stars & Planets Seminar

[Harvard & Smithsonian \(CfA\) \(virtual\)](#)

INVITED SEMINAR

Nov. 2020

Institute Colloquium

[Tautenburg Observatory](#)

INVITED COLLOQUIUM

Jun. 2019

Planet Formation and Evolution Conference

CONTRIBUTED CONFERENCE TALK

Japanese-German Meeting on Exoplanets and Planet Formation

CONTRIBUTED CONFERENCE TALK

Ad Valvas Seminar

INVITED SEMINAR

University of Rostock

Mar. 2019

Edesheim

Sep. 2018

KU Leuven

Jul. 2018

Teaching, Leadership, and Outreach

Popular science article: Kleine M-Sterne überraschen mit Gasriesen

Authored popular science article on giant planets around M dwarfs (in German)

Sterne und Weltraum (Circulation: 16'000 copies)

Aug. 2022

Guest lecturer: Introduction to Space Travel

Held a lecture on Solar System formation

University of Applied Sciences Upper Austria Steyr

Nov. 2021

Research Advisor: Bachelor Student Antonia Seifert (Uni Heidelberg)

Designed and guided Bachelor project (Planetary systems around M dwarfs)

MPIA Heidelberg

Apr. 2021 – Jul. 2021

Team Lead: EDEN Transit Survey

Coordinated a team of 14 observers; managed ~180 nights (CAHA 1.23m)

MPIA Heidelberg/University of Arizona

Jun. 2018 – Jan. 2021

Research Advisor: Summer Student Dang Pham (Cornell)

Designed and guided summer project (see *paper*)

MPIA Heidelberg

Jul. 2019 – Jan. 2021

Teaching Assistant: Numerical Methods Block Course

Held lectures and tutorials on numerical methods for BSc/MSc students

Heidelberg University

Feb. 2018, Feb. 2020

Author: Q&A feature

Wrote a short article about planet formation around Population III stars

All About Space Magazine

Nov. 2019

Invited Speaker: Student Information Day

Advised senior grade students on perspectives in the natural sciences

Berufsoberschule Technik, Augsburg

Apr. 2017

Team Lead: MOVE II Cubesat

Head of communications and ground control; successful launch in Dec. 2018

Scientific Workgroup for Rocketry and Spaceflight

Jan. 2011 – Apr. 2015

Tutor: Math Prep Course for Physics Students

Taught 30 first year students in mathematical concepts in physics

Technical University of Munich

Sep. 2011

Community Services

2023 **Reviewer for a graduate research fellowship (New Frontiers Initiative)**, NSF/University of Illinois

2023 **EDEN Science Workshop: SOC+LOC**, Organized an international conference

virtual

2022 **Subject-matter expert panelist for a research program review**, NASA

2021 **Science Data Officer for a Mars analog mission**, Austrian Space Forum

Innsbruck/Negev

2021 **Journal Referee**, Astronomy & Astrophysics

2017–2021 **PhD Student Representative**, Intl. Max Planck Research School

Heidelberg

2017–2021 **Fellowship Selection Board**, Intl. Max Planck Research School

Heidelberg

2020 **Co-organized Climate Hackathon**, Scientists for Future

virtual

2019 **MPIA Half Marathon Fundraise**, Raised 2000+ EUR for rare disease research (Milly's Mission)

Heidelberg

2019 **HGSFP Winter School: SOC+LOC**, Co-organized a winter school for 60 participants

Obergurgl

2018 **Japanese-German Meeting on Planet Formation: SOC+LOC**, Co-organized an international workshop

Edesheim

Observing Experience

Accepted PI proposal:

31 nights **2.2 m MPG/ESO telescope**

La Silla Observatory

Observations:

18 nights **1.23 m telescope**

Calar Alto Observatory

13 nights **2.2 m MPG/ESO telescope**

La Silla Observatory

12 nights **61" Kuiper telescope**

Mount Bigelow Observatory

8 nights **1.8 m Vatican Advanced Technology Telescope**

Mount Graham International Observatory

4 nights **1.22 m telescope**

Asiago Astrophysical Observatory

2 nights **1.8 m telescope**

Asiago Astrophysical Observatory

1 night **92 cm telescope**

Asiago Astrophysical Observatory

Publications

refereed: 37 — first author: 4 — citations: 873 — h-index: 18 (2023-07-11) — [ads search](#)

Lead Author

- 4 **Schlecker, M.**; Burn, R.; Sabotta, S. *et al.*, *RV-detected planets around M dwarfs: Challenges for core accretion models*, A&A, 664, 2022 ([arXiv:2205.12971](#))
- 3 **Schlecker, M.**; Pham, D.; Burn, R. *et al.*, *The New Generation Planetary Population Synthesis (NGPPS). V. Predetermination of planet types in global core accretion models*, A&A, 656, 2021 ([arXiv:2104.11750](#))
- 2 **Schlecker, M.**; Mordasini, C.; Emsenhuber, A. *et al.*, *The New Generation Planetary Population Synthesis (NGPPS). III. Warm super-Earths and cold Jupiters: a weak occurrence correlation, but with a strong architecture-composition link*, A&A, 656, 2021 ([arXiv:2007.05563](#))
- 1 **Schlecker, M.**; Kossakowski, D.; Brahm, R. *et al.*, *A Highly Eccentric Warm Jupiter Orbiting TIC 237913194*, AJ, 160, 275, 2020 ([arXiv:2010.03570](#))

Co-Author

- 33 Gupta, A. F. *et al.*, *A High-Eccentricity Warm Jupiter Orbiting TOI-4127*, AJ, 165, 234, 2023 ([arXiv:2303.14570](#))
- 32 Brahm, R. *et al.*, *Three Long-period Transiting Giant Planets from TESS*, AJ, 165, 227, 2023 ([arXiv:2304.02139](#))
- 31 Trifonov, T. *et al.*, *TOI-2525 b and c: A Pair of Massive Warm Giant Planets with Strong Transit Timing Variations Revealed by TESS*, AJ, 165, 179, 2023 ([arXiv:2302.05694](#))
- 30 Dietrich, J.; Apai, D.; **Schlecker, M.** *et al.*, *EDEN Survey: Small Transiting Planet Detection Limits and Constraints on the Occurrence Rates of Planets around Late-M Dwarfs within 15 pc*, AJ, 165, 149, 2023 ([arXiv:2302.04138](#))
- 29 Ribas, I. *et al.*, *The CARMENES search for exoplanets around M dwarfs. Guaranteed time observations Data Release 1 (2016-2020)*, A&A, 670, 2023 ([arXiv:2302.10528](#))
- 28 Kossakowski, D. *et al.*, *The CARMENES search for exoplanets around M dwarfs. Wolf 1069 b: Earth-mass planet in the habitable zone of a nearby, very low-mass star*, A&A, 670, 2023 ([arXiv:2301.02477](#))
- 27 Chaturvedi, P. *et al.*, *TOI-1468: A system of two transiting planets, a super-Earth and a mini-Neptune, on opposite sides of the radius valley*, A&A, 666, 2022 ([arXiv:2208.10351](#))
- 26 Ulmer-Moll, S. *et al.*, *Two long-period transiting exoplanets on eccentric orbits: NGTS-20 b (TOI-5152 b) and TOI-5153 b*, A&A, 666, 2022 ([arXiv:2207.03911](#))
- 25 Luque, R. *et al.*, *The HD 260655 system: Two rocky worlds transiting a bright M dwarf at 10 pc*, A&A, 664, 2022 ([arXiv:2204.10261](#))

- 24 Mollière, P. et al., *Interpreting the Atmospheric Composition of Exoplanets: Sensitivity to Planet Formation Assumptions*, ApJ, 934, 74, 2022 (arXiv:2204.13714)
- 23 Kemmer, J. et al., *Discovery and mass measurement of the hot, transiting, Earth-sized planet, GJ 3929 b*, A&A, 659, 2022 (arXiv:2202.00970)
- 22 Espinoza, N. et al., *A Transiting, Temperate Mini-Neptune Orbiting the M Dwarf TOI-1759 Unveiled by TESS*, AJ, 163, 133, 2022 (arXiv:2202.01240)
- 21 González-Álvarez, E. et al., *A multi-planetary system orbiting the early-M dwarf TOI-1238*, A&A, 658, 2022 (arXiv:2111.14602)
- 20 Kossakowski, D. et al., *TOI-1201 b: A mini-Neptune transiting a bright and moderately young M dwarf*, A&A, 656, 2021 (arXiv:2109.09346)
- 19 Burn, R.; **Schlecker, M.**; Mordasini, C. et al., *The New Generation Planetary Population Synthesis (NGPPS). IV. Planetary systems around low-mass stars*, A&A, 656, 2021 (arXiv:2105.04596)
- 18 Trifonov, T. et al., *A Pair of Warm Giant Planets near the 2:1 Mean Motion Resonance around the K-dwarf Star TOI-2202*, AJ, 162, 283, 2021 (arXiv:2108.05323)
- 17 Sabotta, S.; **Schlecker, M.**; Chaturvedi, P. et al., *The CARMENES search for exoplanets around M dwarfs. Planet occurrence rates from a subsample of 71 stars*, A&A, 653, 2021 (arXiv:2107.03802)
- 16 Lin, C. et al., *EDEN: Flare Activity of the Nearby Exoplanet-hosting M Dwarf Wolf 359 Based on K2 and EDEN Light Curves*, AJ, 162, 11, 2021
- 15 Amado, P. J. et al., *The CARMENES search for exoplanets around M dwarfs. Two terrestrial planets orbiting G 264-012 and one terrestrial planet orbiting Gl 393*, A&A, 650, 2021 (arXiv:2105.13785)
- 14 Hobson, M. J. et al., *A Transiting Warm Giant Planet around the Young Active Star TOI-201*, AJ, 161, 235, 2021 (arXiv:2103.02685)
- 13 Addison, B. C. et al., *TOI-257b (HD 19916b): a warm sub-saturn orbiting an evolved F-type star*, MNRAS, 502, 3704, 2021 (arXiv:2001.07345)
- 12 Dreizler, S. et al., *The CARMENES search for exoplanets around M dwarfs. LP 714-47 b (TOI 442.01): populating the Neptune desert*, A&A, 644, 2020 (arXiv:2011.01716)
- 11 Stock, S. et al., *The CARMENES search for exoplanets around M dwarfs. Three temperate-to-warm super-Earths*, A&A, 643, 2020 (arXiv:2010.00474)
- 10 Brahm, R. et al., *TOI-481 b and TOI-892 b: Two Long-period Hot Jupiters from the Transiting Exoplanet Survey Satellite*, AJ, 160, 235, 2020 (arXiv:2009.08881)
- 9 Kemmer, J. et al., *Discovery of a hot, transiting, Earth-sized planet and a second temperate, non-transiting planet around the M4 dwarf GJ 3473 (TOI-488)*, A&A, 642, 2020 (arXiv:2009.10432)
- 8 Nowak, G. et al., *The CARMENES search for exoplanets around M dwarfs. Two planets on opposite sides of the radius gap transiting the nearby M dwarf LTT 3780*, A&A, 642, 2020 (arXiv:2003.01140)
- 7 Jahnke, K. et al., *An astronomical institute's perspective on meeting the challenges of the climate crisis*, Nature Astronomy, 4, 812, 2020 (arXiv:2009.11307)
- 6 Bluhm, P. et al., *Precise mass and radius of a transiting super-Earth planet orbiting the M dwarf TOI-1235: a planet in the radius gap?*, A&A, 639, 2020 (arXiv:2004.06218)
- 5 Gibbs, A. et al., *EDEN: Sensitivity Analysis and Transiting Planet Detection Limits for Nearby Late Red Dwarfs*, AJ, 159, 169, 2020 (arXiv:2002.10017)

- 4 Espinoza, N. et al., *HD 213885b: a transiting 1-d-period super-Earth with an Earth-like composition around a bright ($V = 7.9$) star unveiled by TESS*, MNRAS, 491, 2982, 2020 ([arXiv:1903.07694](#))
- 3 Kossakowski, D. et al., *TOI-150b and TOI-163b: two transiting hot Jupiters, one eccentric and one inflated, revealed by TESS near and at the edge of the JWST CVZ*, MNRAS, 490, 1094, 2019 ([arXiv:1906.09866](#))
- 2 Morales, J. C. et al., *A giant exoplanet orbiting a very-low-mass star challenges planet formation models*, Science, 365, 1441, 2019 ([arXiv:1909.12174](#))
- 1 Luque, R. et al., *Planetary system around the nearby M dwarf GJ 357 including a transiting, hot, Earth-sized planet optimal for atmospheric characterization*, A&A, 628, 2019 ([arXiv:1904.12818](#))

Preprints & Other

- 6 Murgas, F. et al., *Two super-Earths at the edge of the habitable zone of the nearby M dwarf TOI-2095*, ArXiv, 2023 ([arXiv:2304.09220](#))
- 5 Pale, E. et al., *GJ 806 (TOI-4481): A bright nearby multi-planetary system with a transiting hot, low-density super-Earth*, ArXiv, 2023 ([arXiv:2301.06873](#))
- 4 **Schlecker, M.**, *The architectures of planetary systems: Population synthesis meets observations*, Ph.D. Thesis, 2021
- 3 **Schlecker, M.**, *lcps: Light curve pre-selection*, Astrophysics Source Code Library, 2018
- 2 **Schlecker, M.**, *Irregular Variability in Kepler Photometry*, Master's Thesis, 2016
- 1 Tiedemann, L. et al., *The development of the μ ROS X-ray telescope*, SPIE, 8859, 885905, 2013