

# Martin Schlecker

POSTDOCTORAL RESEARCHER · EXOPLANETEER · OPEN SCIENCE ENTHUSIAST

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## Education

### 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  $\mu$ ROS*

## Selected Presentations

### Forming and Exploring Habitable Worlds

[Edinburgh](#)

CONTRIBUTED CONFERENCE TALK

Nov. 2022

### Lunar and Planetary Laboratory Conference

[LPL, Tucson](#)

CONTRIBUTED CONFERENCE TALK

Aug. 2022

### JPL Astrophysics Luncheon Seminar

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

INVITED SEMINAR

Apr. 2022

### Origins Seminar

[University of Arizona](#)

INVITED SEMINAR

Jan. 2022

### ESO workshop: The Star-Planet Connection

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

CONTRIBUTED CONFERENCE TALK

Oct. 2021

### Königstuhl Colloquium

[MPIA \(virtual\)](#)

INVITED COLLOQUIUM

Jun. 2021

### EDEN Science Workshop

[University of Arizona \(virtual\)](#)

CONTRIBUTED CONFERENCE TALK

Dec. 2020

### PLATO Extrasolar Planet 2020

[DLR Berlin \(virtual\)](#)

CONTRIBUTED CONFERENCE TALK

Dec. 2020

### 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

[University of Rostock](#)

CONTRIBUTED CONFERENCE TALK

Mar. 2019

### Japanese-German Meeting on Exoplanets and Planet Formation

[Edesheim](#)

CONTRIBUTED CONFERENCE TALK

Sep. 2018

### Ad Valvas Seminar

[KU Leuven](#)

INVITED SEMINAR

Jul. 2018

## Teaching, Leadership, and Outreach

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### 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

*Berufshochschule 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

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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

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### 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*

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

*Mount Graham International Observatory*

8 nights **61" Kuiper Telescope**

*Mount Bigelow 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*

## Honors & Awards

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2016 **Mobility grant**, TUM Physics Department

*Garching, Germany*

2013 **Travel Award**, TUMexchange Program

*Munich/Singapore*

2012 **Best Business Plan**, UnternehmerTUM Business Plan Seminar

*Garching, Germany*

2007 **Outstanding Performance Award**, MAN Training Center

*Augsburg, Germany*

2007 **Talent Promotion**, "Begabtenförderung Berufliche Bildung", Chamber of Trade and Industry

*Augsburg, Germany*

## Publications

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refereed: 31 — first author: 4 — citations: 603 — h-index: 13 (2022-11-12) — [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

- 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

- 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  $\mu$ ROSI X-ray telescope*, SPIE, 8859, 885905, 2013