

Curriculum Vitae:

Ludmila Caronecarone@mpia.de<https://www2.mpia-hd.mpg.de/homes/carone/>**Personal information:**

Nationality (Italian)

Max Planck Institute for Astronomy

Königstuhl 17

69117 Heidelberg, Germany

Telephone: +49 6221528-219

Languages: German, English, Dutch with a Flemish/German accent (B2+, fluent in speaking & writing)

Publications: 44 papers in international peer-reviewed journals (h-index: 25¹)**Positions:**

10/2018 - today	Independent research fellow (fully funded until 10/2022)	MPIA, Heidelberg
11/2016 – 9/2018	Postdoctoral researcher (PI: Th. Henning)	MPIA, Heidelberg
7/2012 – 10/2016	Post-doctoral Scholarship in Exoplanet Characterization	KU Leuven
4/2004 – 10/2011	Project manager (Planetary science)	University Cologne

Education:

22/05/2012	PhD in geophysics ² "Tidal Interactions of short-period extrasolar transit planets with their host stars: Constraining the elusive stellar tidal dissipation factor", Supervisor: Dr. M. Pätzold	University Cologne
10/1996 – 3/2002 ³	Diploma (Physics) in high-energy particle physics	University Bonn

Latest/upcoming talks:

Postponed to 2022	(Invited talk) : " <i>Chemistry in Exoplanets</i> ", From Clouds to Planets II: The Astrochemical Link, Berlin
24/11/2020	" <i>3D climates – Beware of the boundaries!</i> ", CHAMELEON (Virtual Laboratories for Exoplanets and Planet-Forming Disks) Kickoff meeting St. Andrews Centre for Exoplanet Science
4/08/2020	" <i>Into the abyss - How the deep atmosphere influences observables in extrasolar planets</i> ", Virtual Pizza lunch, Harvard-Smithsonian Center for Astrophysics
30/07/2020	" <i>Desiccation of the TRAPPIST-1 Planets During Their Magma Ocean Phase</i> " Exoplanets III (virtual), Heidelberg
15-20/9/2019	" <i>The ultra-cold night sides of the hot and super-hot Jupiters WASP-43b and WASP-18b, arising with deep wind flow</i> ", EPSC-DPS Joint Meeting 2019 (Combined Planetary US/Europe meeting), Geneva

1 According to the astrophysics data system (ads)

2 I was explicitly hired as project and outreach manager with an opportunity to do a PhD alongside

3 Science journalism training between 2003 - 2004

Awards & Honors (last 3 years):

- 10/2020 Research-specific performance bonus, MPIA, for outstanding performance in the co-organization of the Königstuhl-Colloquium since 2017
- 9/2020 Invited referee as expert in 3D climate dynamics for “Oxford Research Encyclopedia of Planetary Science”
- 2018- 2020 Invited talks on 3D circulation of Exo-Earths (EWASS 2018) and 3D chemistry in exoplanets (From Clouds to Planets II, postponed 2022)
- 7/2017 Henri Vanderlindenprijs – Biannual award for outstanding work in astronomy (Belgium) for Carone+2015

Observational campaigns (last 2 years):

- 10/2020-12/2020 “How often does a planet spin-up its host star?”, MPG2.2m/FEROS PI: A. Oetjens (with Maria Bergemann)
- 7/2020-7/2021 “Towards Constraints On Morning And Evening Terminators Of Distant Worlds”, TESS, Cycle 3, PI: N. Espinoza
- 24/11/2020 Submitted. “Is HATS-6b heavy metal or not? Probing a gas giant planet around an M dwarf for signatures of its birth”, JWST PI: **Carone**
- 21/10/2019 “Now you see me the WASP-117b version – a Saturn-like exoplanet that resides in two different chemical regimes”, HST GO 15301 PI: **Carone**
- 26/10/2018 “Ground based high resolution spectroscopy of WASP-117b simultaneously with Hubble measurement” PI Fei Yang (Co-PI: **Carone**) VLT/ESPRESSO

Awarded research grants as PI (last 3 years):

- 6/2020 – 6/2025 Partner in CHAMELEON ERC network (co-supervision of 2 PhD students)
- 10/2019 - 10/2022 (with Co-PI Noack, FU Berlin) “The Archaean Earth - Coupling between geodynamics and 3D climate modelling”, DFG priority programme “Building a habitable Earth” (German Science Foundation) (246 000 Euros)
- 10/2018- 9/2017 “Characterising WASP-117b - a Saturn that switches chemical regimes” German Aerospace Center, DLR, (70 000 Euros)

Supervised students (last 3 years):

- 10/2020 – 10/2024 Sven Kiefer, KU Leuven & St. Andrews, “Cloud formation in 3D exoplanet atmospheres” (CHAMELEON⁴, co-supervision with Helling & Decin)
- 10/2020 – 10/2023 Aaron Schneider, KU Leuven & Univ. Copenhagen, “Connecting the atmosphere and the interior in extrasolar gas planets” (CHAMELEON, co-supervision with Jorgensen & Decin)
- 9/2017- 9/2021 Robin Baeyens, KU Leuven, “Disequilibrium chemistry in exoplanets from 1D to 3D”, FWO fellowship, (co-supervision with L. Decin)
- 9/2019 – 2/2020 Annika Oetjens,⁵ MPIA, Bachelor thesis, “Ghost from the past: The possibility of stellar spin-up due to engulfed planets around metal-poor main sequence stars” co-supervision with Maria Bergemann.
- 9/2018 – 7/2019 Patrick Barth, MPIA, Master thesis⁶, “Open Source and Versatile Magma Ocean Evolution Model for Terrestrial Exoplanets and its Application to the

4 CHAMELEON ERC Marie Curie innovative training 2020 -2025 <https://chameleon.wp.st-andrews.ac.uk>

5 Oetjens, Carone, Bergemann, Serenelli, A&A, 2020

6 Barth, Carone, Barnes, Noack, Molliere, Henning, arXiv:2008.09599

TRAPPIST-1 Planets” with Th. Henning & Rory Barnes (U of Washington)

International workshop organization (last 3 years):

- Summer 2022 **Main organizer** for 3rd CHAMELEON summer school @ MPIA
15 PhD students for the network + Supervisors from St. Andrews,
Copenhagen, KU Leuven, Antwerp, Groningen, Edinburgh
- 10-14.2.2020 **Main organizer** for Leiden international workshop “*Tackling the
complexities of substellar atmospheres – Solar System to brown dwarf*”
- 24-28/6/2019 STARPLANET2019, Ringberg workshop on “star-planet connection” (50
intern. Participants), **Co-Chair** with Maria Bergemann

Institutional responsibilities@MPIA:

- Since 2017- today Co-organization of Königstuhl Colloquium at MPIA
- 10/2018 – 7/2020 LOC for exoplanets III
- 3/2017 – 10/2018 Postdoc representative

International functions:

- 6/2020 – 6/2025 Partner in CHAMELEON Virtual Laboratories for exoplanets and disks
ERC Training network
(St. Andrews, Copenhagen, Groningen, Leuven, Antwerp, Edinburgh)
- 1/2020 - today Founding member of Next Millenium Planet Simulation consortium
(NMPS), led by Helling (St. Andrews, UK) with Lüftinger & Güdel (Vienna,
Austria), I. Kamp (Groningen, NL), L. Noack (Berlin, D.)
- 2015 - 2018 Member of the European JWST/MIRI exoplanet model, benchmark team,
PI: Pierre-Oliver Lagage (Obs. Paris)
- 4/2014 – today Member of the PLATO “Work package: Atmosphere”, PI: Lee Grenfell
(DLR Berlin) (PLATO, ESA satellite for 2026)
- 2014 - today Referee for research journal A&A, MNRAS

Major collaborations: Gas planet modelling & characterization

- Prof. Thomas Henning, Dr. Paul Molliere, Dr. Jeroen Bouwman, Max Planck Institute for Astronomy, Heidelberg, (Henning is Co-author in Carone+2018 2020a,b, Molliere provided retrieval for Carone+2020b on WASP-117b and is there 2nd author, Bouwman provided data reduction CASCADE to my HST observations)
- Dr. Maria Bergemann, MPIA, galaxy department, Bergemann is co-author for our star-planet interaction and planetary engulfment paper.
- Dr. Christiane Helling, St. Andrews, UK, collaboration for microphysical cloud modelling in 3D gas giants (Joint cloud modelling in WASP-43b paper submitted, partner in CHAMELEON and NMPS, co-supervision of PhD student Sven Kiefer)
- Prof. Leen Decin, KU Leuven, Belgium, expert in radiative transfer and chemistry, collaboration with chemical modelling in extrasolar gas giants (co-author in my gas planet papers, co-supervision of PhD students Robin Baeyens. Sven Kiefer & Aaron Schneider)
- Dr. Olivia Venot, Laboratoire Interuniversitaire des Systemes Atmospheriques (LISA), Paris, F, Provides kinetic chemistry modelling in 1D to 3D exoplanet atmospheres (Co-author on WASP-117b paper, where we used her scheme to explore CH₄ quenching)
- Dr. Nestor Espinoza, Space Telescope Science Institute (STScI), Baltimore, US collaborator in observation of 3D effects in extrasolar gas giants (Co-author in Carone+2020b, PI in JWST and TESS proposals to investigate morning-evening terminators, where I provided models as input.)

Major collaborations: (Habitable) rocky planets modelling

- Prof. Lena Noack, FU Berlin, collaborator in rocky magma ocean-outgassing atmosphere modelling (co-author in Barth, Carone et al. 2020, arXiv:2008.09599, provides 2D geophysical modelling e.g. plate tectonics for rocky planet modelling)
- Dr. Rory Barnes, U of Washington, Seattle, collaborator in rocky magma ocean-outgassing atmosphere modelling (co-author Barth, Carone et al. 2020. arXiv:2008.09599, provides atmosphere erosion and VPLANET framework for open source inclusion of our magma ocean model VPLANET/MagmOc)
- Prof. Th. Henning, MPIA, collaborator in rocky magma ocean-outgassing atmosphere modelling (co-author in Barth, Carone et al. 2020, arXiv:2008.09599, partner in Heidelberg Initiative For Origins of Life, HIFOL).

Public outreach:**Public talks (latest):**

- 20/10/2020 Faszination Astronomie Online, Haus der Astronomie, "*Stürmisch mit Aussicht auf Saphir-Wolken*"
- 28/9/2019 European Researchers Night at Heidelberg, Germany, Science Movie Night, *The science of "The Martian"*

Event organization (latest):

- 2017-2018 Co-organizer of "Science Slam at MPIA", Heidelberg

References:

- Dr. Christiane Helling Director of St. Andrews Centre for Exoplanet Science, Partner in CHAMELEON and NMPS, co-supervision with PhD Sven Kiefer
ch80@st-andrews.ac.uk
- Prof. Thomas Henning Director of the planet and star formation department at MPIA, my boss (2016-2020), mentor and co-supervisor of master student Patrick Barth
henning@mpia.de
- Dr. Rory Barnes Initiator of VPLANET open source modelling scheme for rocky planets, co-supervision of master student Patrick Barth and collaborator of magma ocean modelling for inclusion in VPLANET.
rkb9@uw.edu