

# Curriculum Vitae of Patrick Barth

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Last updated: April 2, 2021

## Contact

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## Work experience

Since 2019                      **Postgraduate Researcher**  
University of St Andrews, School for Physics and Astronomy & School for Earth  
and Environmental Sciences, UK  
St Andrews Centre for Exoplanet Science  
Feb. - July 2017                **Student Research Assistant**  
Max Planck Institute for Astronomy, Heidelberg, Germany

## Education

Since 2019                      **PhD in Astronomy**  
University of St Andrews, School for Physics and Astronomy & School for Earth  
and Environmental Sciences, UK  
St Andrews Centre for Exoplanet Science  
Supervisor: Dr. Christiane Helling & Dr. Eva Stüeken  
2017 - 2018                      **International Student**  
University of Washington, Seattle, United States of America  
2017 - 2019                      **Master of Science in Physics** (2-year program)  
Final Grade: 1.1 (very good), University of Heidelberg, Department of Physics and  
Astronomy, Germany  
2013 - 2017                      **Bachelor of Science in Physics**  
Final grade: 1.7 (good), University of Heidelberg, Department of Physics and As-  
tronomy, Germany  
2013                                **Abitur**  
Final grade: 1.1 (very good), Karl-Friedrich-Gymnasium Mannheim, Germany

## Awards

2021	<b>Student Presentation Award</b> NoRCEL Meeting, 29-31 March 2021, St Andrews, UK (online)
2019 - 2023	<b>St Leonard's Interdisciplinary Doctoral Scholarship</b> University of St Andrews, UK
2017 - 2018	<b>Baden-Württemberg-Stipendium</b> Scholarship for distinguished students studying abroad
2013	High School Graduation Award of the German Physical Society (DPG)

## Teaching

Spring 2021	<b>Tutor for "Computational Astrophysics" lecture</b> held by Dr. Peter Voitke, Dr. Christiane Helling, and Dr. Martin Dominik, School of Physics and Astronomy, University of St Andrews, UK
Autumn 2020	<b>Demonstrator for "Astronomy and Astrophysics 1" lab</b> held by Dr. Alexander Scholz, School of Physics and Astronomy, University of St Andrews, UK
Spring 2020	<b>Tutor for "Computational Astrophysics" lecture</b> held by Dr. Peter Voitke, Dr. Christiane Helling, and Dr. Martin Dominik, School of Physics and Astronomy, University of St Andrews, UK

## Publications

- **Barth, P.** et al., *MOVES IV. Modelling the influence of stellar XUV-flux, cosmic rays, and stellar energetic particles on the atmospheric composition of the hot Jupiter HD 189733b*, MNRAS, 502, 6201. DOI, arXiv.
- **Barth, P.** et al., *Magma Ocean Evolution of the TRAPPIST-1 planets*, submitted to Astrobiology. arXiv.
- Voitke, P., et al., incl. **Barth, P.**, 2021, *Coexistence of CH<sub>4</sub>, CO<sub>2</sub> and H<sub>2</sub>O in exoplanet atmospheres*, A&A 646, A43. DOI, arXiv.
- Barnes, R., et al., incl. **Barth, P.**, 2020, *VPLanet: The Virtual Planet Simulator*, PASP, 132, 024502. DOI, arXiv.
- Carone, L., Baeyens, R., Mollière, P., **Barth, P.**, et al., *Equatorial retrograde flow in WASP-43b elicited by deep wind jets?*, MNRAS, 496, 3582. DOI, arXiv.

## Talks

29 April 2021	<b>"Modelling the influence of high-energy radiation on the atmospheric composition of the hot Jupiter HD 189733b"</b> vEGU21 (online)
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31 March 2021	<b>"Understanding the role of lightning in the formation of organic molecules on early Earth"</b> NoRCEL Meeting, St Andrews, UK (online)
26 November 2020	<b>"Modelling the influence of high-energy radiation on the atmospheric composition of HD 189733b"</b> CHAMELEON kick-off meeting, University of St Andrews, UK (online)
17 November 2020	<b>"What's the role of lightning in the origin of life"</b> Out Thinkers (LGBT+ STEM Week 2020), University of St Andrews, UK (online)
21 October 2020	<b>"Modelling the influence of high-energy radiation on the atmospheric composition of HD 189733b"</b> Scottish Exoplanet and Brown Dwarf Meeting, University of Edinburgh, UK (online)
24 July 2020	<b>"MOVES IV: Modelling the influence of high-energy radiation on the atmospheric composition of HD 189733b"</b> NOVO Nordisk Meeting, Niels Bohr Institute, University of Copenhagen, Denmark (online)
23 June 2020	<b>"MOVES IV: Modelling the influence of high-energy radiation on the atmospheric composition of HD 189733b"</b> Summer Meeting, St Andrews Centre for Exoplanet Science, UK (online)
18 Dec 2019	<b>"Magma Ocean Model for Terrestrial (Exo)Planets"</b> PSF-Coffee, MPIA, Heidelberg, Germany
10 Oct 2019	<b>"Magma Ocean Model for Terrestrial (Exo)Planets"</b> VPL Meeting, University of Washington, Seattle, US
23 Aug 2019	<b>"Magma Ocean Model for Terrestrial (Exo)Planets"</b> Summer Meeting, St Andrews Centre for Exoplanet Science, UK
27 March 2019	<b>"Coupled Atmosphere-Interior Model for Terrestrial Planets - Application to Early Earth"</b> General Meeting SPP 1833 Habitable Earth, DFG, Cologne, Germany
30 April 2017	<b>"Zirkulation mit Wolkenbildung in planetaren Atmosphären"</b> (G)Astro-Seminar, jDPG, Bad Kreuznach, Germany
11 Jan. 2017	<b>"Large-Scale Circulation with Cloud Formation in Planetary Atmospheres"</b> PSF-Coffee, MPIA, Heidelberg, Germany

## Posters

Sept. 2020	<b>"X-rays, UV, and co: detrimental or beneficial to the origin of life?"</b> <a href="#">Royal Astronomical Society Early Career Poster Exhibition 2020</a>
26 Aug. 2020	<b>"X-rays, UV, and co: detrimental or beneficial to the origin of life?"</b> The STEM Village Virtual Symposium 2020
27-31 July 2020	<b>"MOVES IV: Modelling the influence of high-energy radiation on the atmospheric composition of HD 189733 b"</b> Exoplanet 3, Heidelberg, Germany (online)
6-8 April 2020	<b>"MOVES IV: Modelling the influence of stellar XUV-flux and cosmic rays on the atmospheric composition of HD 189733 b"</b>

	UKEXOM, Birmingham, UK (cancelled due to COVID-19)
9-13 March 2020	<b>”MOVES IV: Modelling the influence of stellar XUV-flux and cosmic rays on the atmospheric composition of HD 189733 b”</b>
	Cloud Academy II, Les Houches, France (cancelled due to COVID-19)
15-20 Sept. 2019	<b>”Desiccation of the TRAPPIST-1 Planets During Their Magma Ocean Phase”</b>
	EPSC-DPS Joint Meeting, Geneva, Switzerland (presented by Ludmila Carone)
24-28 June 2019	<b>”Desiccation of the TRAPPIST-1 Planets During Their Magma Ocean Phase”</b>
	Astrobiology Science Conference, Seattle, WA, USA (presented by Rory Barnes)
24-28 June 2019	<b>”Desiccation of the TRAPPIST-1 Planets During Their Magma Ocean Phase”</b>
	”Star-planet interaction” workshop, Ringberg, Germany (presented by Ludmila Carone)

## Outreach

Since 2019	<b>Mobile Planetarium</b> University of St Andrews, School for Physics and Astronomy
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## Programming Skills

- Intermediate: Python, C
- Basics: Fortran

## Languages

- Native language: German
- Fluent: English
- Basics: Spanish, French

## Volunteer Experience

	<b>University of St Andrews Liberal Democrats</b>
Since 2020	Treasurer
	<b>SaintsLGBT+, University of St Andrews Student Association</b>
Since 2019	Postgraduate Officer
	<b>Hector-Seminar Alumni Association</b>
Since 2019	Vice President
2015 - 2019	Secretary
2013 - 2019	<b>Election Worker</b> in Mannheim, Germany