Cyril Gapp

PhD student
Max Planck Institute for Astronomy, Königstuhl 17, 69117 Heidelberg, Germany
Email: gapp@mpia.de
Website: https://gapp-c.github.io
ORCiD: https://orcid.org/0009-0007-9356-8576
Last update: November 24, 2025

Research interests

- Space-based observations of transiting exoplanets' atmospheres, data reduction and analysis
- Atmospheric chemistry and three-dimensional structure of hot Jupiters and sub-Neptunes

Education

Since Aug 2022	**PhD (Astronomy)**, Max Planck Institute for Astronomy (MPIA), Atmospheric Physics of Exoplanets (APEx) Department, and Ruprecht Karl University, *Heidelberg, Germany* *Thesis:* Observational characterization of transiting exoplanets' atmospheres *Supervisor:* Dr. Thomas M. Evans-Soma
Oct 2018 - Aug 2021	**Master's (Physics)**, Georg August University, *Göttingen, Germany* *Thesis:* Characterization of Jupiter's atmosphere using far infrared spectra measured with PACS onboard the Herschel Space Observatory (completed at Max Planck Institute for Solar System Research, Planetary Science department, *Göttingen, Germany*) *Supervisor:* Dr. Miriam Rengel, *Grade:* 1.2
Jan - March 2020	**Visiting student (Meteorology)**, University Centre in Svalbard, *Longyearbyen, Norway* *Course:* AGF-350: The arctic atmospheric boundary layer and local climate processes *Scholarship:* PROMOS stipend of the German Academic Exchange Service (DAAD)
Sep 2017 - Jun 2018	**Visiting student (Physics)**, University of Seville, *Seville, Spain* *Scholarship:* ERASMUS+ stipend (EU exchange program)
Oct 2014 - Aug 2017	**Bachelor's (Geophysics)**, University of Münster, *Münster, Germany* *Thesis:* Numerical simulation of double-diffusive convection in the finger regime under the influence of homogeneous background shear *Supervisor:* Dr. Stephan Stellmach, *Grade:* 1.8

Research experience

Oct 2021 - Jul 2022	**Researcher**, Max Planck Institute for Solar System Research, *Göttingen, Germany* Planetary Science department, Planetary Atmospheres group
Jun - Jul 2020	**Student assistant**, University of Bremen, *Bremen, Germany* Six-week research expedition M164 (physical oceanography), R/V Meteor
Aug - Sep 2016	**Summer intern**, Harvard University, *Cambridge, MA, USA* Department of Earth and Planetary Sciences, Harvard Seismology Group *Scholarship:* PROMOS stipend of the German Academic Exchange Service (DAAD)
Jul - Sep 2014	**Summer intern**, University of California, *Santa Cruz, CA, USA* Department of Astronomy and Astrophysics

Observing programs

JWST Cycle 2	PI	GO 3818	7.3 hours	To be or not to be in equilibrium: Probing disequilibrium chemistry on the warm sub-Neptune TOI-270 d
JWST Cycle 2	co-I	GO 3969	61.8 hours	Hot Jupiter Atmospheric Forecast: are mornings cloudier than evenings in other worlds?
JWST Cycle 2	co-I	GO 2961	9.7 hours	Vaporized rocks: detecting silicate cloud precursors in ultra-hot Jupiters

Conferences, workshops and summer schools

Nov 2025	'Signal in the noise' workshop		Kreuth, Germany
Jul 2025	Summer school on exoplanet atmospheres, *DPG*	Full-week tutor	Bad Honnef, Germany
Jun 2025	EAS 2025	Poster	Cork, Ireland
Sep 2024	EPSC2024	Talk and poster	Berlin, Germany
Jul 2024	The Great Link Workshop, *MPIA*	Talk	Heidelberg, Germany
Jun 2024	Exoplanets V	Poster	Leiden, Netherlands
Jul 2023	2023 Sagan Exoplanet Summer Hybrid Workshop	Tutor (session 4)	Pasadena, CA, USA
Jun 2023	ExoSLAM Summer School and Exoclimes VI	Talk	Exeter, UK
May 2023	4th Advanced School on Exoplanetary Science (ASES 4)	Talk	Vietri sul Mare, Italy
Nov 2022	'Celebrating JWST's first six months of exoplanet data'		Kreuth, Germany
Aug 2022	Astronomy, astrochemistry and the origin of life		Heidelberg, Germany
Oct 2021	SPP 1992 all-hands-on-deck meeting 2021	Talk	Online
Sep 2021	Annual meeting of the German Astronomical Society	Talk	Online
Aug 2021	Annual meeting of the Asia Oceania Geosciences Society	Talk	Online
Sep 2020	EPSC2020	Poster	Online

Seminar talks

Nov 2025	BOWIE+ seminar series	BOWIE+ collaboration	Online
Nov 2025	CSH lunch	University of Bern	Bern, Switzerland
Jul 2025	Exocoffee	MPIA	Heidelberg, Germany
Nov 2024	Physics research seminar	University of Newcastle	Newcastle, Australia
Jul 2024	Exocoffee	MPIA	Heidelberg, Germany
Nov 2023	Astro Seminar	University of Kansas	Online

Teaching and supervision experience

May - Jul 2024	**Summer intern co-supervisor** of Djemma Ruseva, ten-week internship at *MPIA*	Heidelberg, Germany
Jun 2023 - Feb 2025	**Teaching assistant** for the lab experiment 'CCD photometry in modern astronomy', *Ruprecht Karl University*	Heidelberg, Germany
Sep 2021 - Mar 2022	**Teaching assistant** for 'Experimental physics III: waves, optics and atomic physics', *Georg August University*	Göttingen, Germany
Oct 2020	**Teaching assistant** for the preparatory course 'Mathematical methods of physics', *Georg August University*	Göttingen, Germany

Community services

Since Jul 2025	**Referee**	Monthly Notices of the Royal Astronomical Society
Dec 2022 - Jan 2024	**Seminar organizer**	Exocoffee, *MPIA*
Jan 2016 - Jul 2017	**Chair**	Geophysics students representative, *University of Münster*
Sep 2015 - May 2016	**LOC member**	Geophysical Activity Program 2016, *Münster, Germany*
Apr 2015 - Jul 2017	**Member**	Geophysics students representative, *University of Münster*

Press release and outreach

Oct 2025	Outreach talk	WASP-121 b: Ein Planet, dessen ereignisreiche Jugend Spuren hinterließ (60 minute talk in German at Planetarium Erkrath)	Erkrath, Germany
Jul 2025	Interview	YouTube channel EarthSky, about WASP-121 b	Online
Jun 2025	Press release	Webb reveals the origin of the ultra-hot exoplanet WASP-121 b	MPIA

Languages

Computing: Python, MATLAB, Fortran90, git, LaTeX, Linux, Mac
Natural: German (native), English (fluent), Spanish (fluent), French (beginner)

First Author:

[1] Cyril Gapp, Thomas M. Evans-Soma, Joanna K. Barstow, Joshua D. Lothringer, David K. Sing, Djemma Ruseva, Eva-Maria Ahrer, Jayesh M. Goyal, Duncan Christie, Laura Kreidberg, and Nathan J. Mayne. WASP-121 b's Transmission Spectrum Observed with JWST/NIRSpec G395H Reveals Thermal Dissociation and SiO in the Atmosphere. AJ, 169(6):341, June 2025. DOI: 10.3847/1538-3881/ad9c6e.

[2] Cyril Gapp, Miriam Rengel, Paul Hartogh, Hideo Sagawa, Helmut Feuchtgruber, Emmanuel Lellouch, and Geronimo L. Villanueva. Abundances of trace constituents in Jupiter's atmosphere inferred from Herschel/PACS observations. A&A, 688:A10, August 2024. DOI: 10.1051/0004-6361/202347345.

Co-author:

[3] Louis-Philippe Coulombe, Björn Benneke, Joshua Krissansen-Totton, Alexandrine L'Heureux, Caroline Piaulet-Ghorayeb, Michael Radica, Pierre-Alexis Roy, Eva-Maria Ahrer, Charles Cadieux, Yamila Miguel, Hilke E. Schlichting, Elisa Delgado-Mena, Christopher Monaghan, Hanna Adamski, Eshan Raul, Ryan Cloutier, Thaddeus D. Komacek, Jake Taylor, Cyril Gapp, Romain Allart, François Bouchy, Bruno L. Canto Martins, Neil J. Cook, René Doyon, Thomas M. Evans-Soma, Pierre Larue, Alejandro Suárez Mascareño, and Joost P. Wardenier. Possible Evidence for the Presence of Volatiles on the Warm Super-Earth TOI-270 b. AJ, 170(4):226, October 2025. DOI: 10.3847/1538-3881/adfc6a.

[4] K. Angelique Kahle, Jasmina Blecic, Reza Ashtari, Laura Kreidberg, Yui Kawashima, Patricio E. Cubillos, Drake Deming, James S. Jenkins, Paul Mollière, Seth Redfield, Qiushi Chris Tian, Jose I. Vines, David J. Wilson, Lorena Acuña, Bertram Bitsch, Jonathan Brande, Kevin France, Kevin B. Stevenson, Ian J. M. Crossfield, Tansu Daylan, Ian Dobbs-Dixon, Thomas M. Evans-Soma, Cyril Gapp, Antonio García Muñoz, Kevin Heng, Renyu Hu, Evgenya L. Shkolnik, Keivan G. Stassun, and Johanna Teske. The SPACE Program: I. The featureless spectrum of HD 86226 c challenges sub-Neptune atmosphere trends. A&A, 701:A184, September 2025. DOI: 10.1051/0004-6361/202554916.

[5] Thomas M. Evans-Soma, David K. Sing, Joanna K. Barstow, Anjali A. A. Piette, Jake Taylor, Joshua D. Lothringer, Henrique Reggiani, Jayesh M. Goyal, Eva-Maria Ahrer, Nathan J. Mayne, Zafar Rustamkulov, Tiffany Kataria, Duncan A. Christie, Cyril Gapp, Jiayin Dong, Daniel Foreman-Mackey, Soichiro Hattori, and Mark S. Marley. SiO and a super-stellar C/O ratio in the atmosphere of the giant exoplanet WASP-121 b. *Nature Astronomy*, 9:845–861, June 2025. DOI: 10.1038/s41550-025-02513-x.

[6] Guangwei Fu, Kevin B. Stevenson, David K. Sing, Sagnick Mukherjee, Luis Welbanks, Daniel Thorngren, Shang-Min Tsai, Peter Gao, Joshua Lothringer, Thomas G. Beatty, Cyril Gapp, Thomas M. Evans-Soma, Romain Allart, Stefan Pelletier, Pa Chia Thao, and Andrew W. Mann. Statistical Trends in JWST Transiting Exoplanet Atmospheres. ApJ, 986(1):1, June 2025. DOI: 10.3847/1538-4357/ad7bb8.

[7] Eva-Maria Ahrer, Michael Radica, Caroline Piaulet-Ghorayeb, Eshan Raul, Lindsey Wiser, Luis Welbanks, Lorena Acuña, Romain Allart, Louis-Philippe Coulombe, Amy Louca, Ryan MacDonald, Morgan Saidel, Thomas M. Evans-Soma, Björn Benneke, Duncan Christie, Thomas G. Beatty, Charles Cadieux, Ryan Cloutier, René Doyon, Jonathan J. Fortney, Anna Gagnebin, Cyril Gapp, Hamish Innes, Heather A. Knutson, Thaddeus Komacek, Joshua Krissansen-Totton, Yamila Miguel, Raymond Pierrehumbert, Pierre-Alexis Roy, and Hilke E. Schlichting. Escaping Helium and a Highly Muted Spectrum Suggest a Metal-enriched Atmosphere on Sub-Neptune GJ 3090 b from JWST Transit Spectroscopy. ApJ, 985(1):L10, May 2025. DOI: 10.3847/2041-8213/add010.

[8] Joshua D. Lothringer, Katherine A. Bennett, David K. Sing, Brian Kehoe-Seamons, Zafar Rustamkulov, Henrique Reggiani, Kevin C. Schlaufman, Patrick McCreery, Seti Norris, Peter Hauschildt, Ceiligh Cacho-Negrete, Amélie Gressier, Néstor Espinoza, Cyril Gapp, Thomas M. Evans-Soma, Kevin B. Stevenson, Hannah Wakeford, Neale Gibson, Jamie Wilson, and Nikolay Nikolov. Refractory and Volatile Species in the UV-to-IR Transmission Spectrum of Ultra-hot Jupiter WASP-178b with HST and JWST. AJ, 169(5):274, May 2025. DOI: 10.3847/1538-3881/adc117.

[9] Caroline Piaulet-Ghorayeb, Björn Benneke, Michael Radica, Eshan Raul, Louis-Philippe Coulombe, Eva-Maria Ahrer, Daria Kubyshkina, Ward S. Howard, Joshua Krissansen-Totton, Ryan J. MacDonald, Pierre-Alexis Roy, Amy Louca, Duncan Christie, Marylou Fournier-Tondreau, Romain Allart, Yamila Miguel, Hilke E. Schlichting, Luis Welbanks, Charles Cadieux, Caroline Dorn, Thomas M. Evans-Soma, Jonathan J. Fortney, Raymond Pierrehumbert, David Lafrenière, Lorena Acuña, Thaddeus Komacek, Hamish Innes, Thomas G. Beatty, Ryan

Cloutier, René Doyon, Anna Gagnebin, Cyril Gapp, and Heather A. Knutson. JWST/NIRISS Reveals the Water-rich "Steam World" Atmosphere of GJ 9827 d. ApJ, 974(1):L10, October 2024. DOI: 10.3847/2041-8213/ad6f00.

[10] Steven S. Vogt, Jennifer Burt, Stefano Meschiari, R. Paul Butler, Gregory W. Henry, Songhu Wang, Brad Holden, Cyril Gapp, Russell Hanson, Pamela Arriagada, Sandy Keiser, Johanna Teske, and Gregory Laughlin. Six Planets Orbiting HD 219134. ApJ, 814(1):12, November 2015. DOI: 10.1088/0004-637X/814/1/12.