


# Lionel J. Garcia

born in 1994 in France

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 <https://lgrcia.github.io>

## EDUCATION

### **2019 - 2023** **PhD in Astronomy**

University of Liège  
Belgium

Towards the detailed atmospheric characterization of temperate rocky exoplanets

*Supervisor: Michaël Gillon (SPECULOOS & TRAPPIST teams)*

### **2016 - 2017** **MSc in Computer Science**

University of Bordeaux  
France

High performance computing and Image processing

### **2014 - 2017** **MSc in Optical Instrumentation**

Institut d'Optique  
France

Photonics and optical Instrumentation

### **2012 - 2014** **BS in Physics**

University of Paris-Sud  
France

Applied Physics

## POSITIONS

### **2019 - 2021** **Teaching assistant**

University of Liège  
Belgium

Supervision of tutorial sessions at undergraduate and graduate levels  
*150h/year – combined with half-time research*

### **2018 (1 year)** **Young Graduate Trainee**

ESA-ESTEC  
Netherlands

Development of novel strategies to build better spacecraft precursor models

### **2017 (6 months)** **Technical Student**

CERN  
Switzerland

Characterization and prototyping of next-generation Beam Wire Scanners for the LHC injectors upgrade

### **2016 (3 months)** **Trainee**

ESA-ESTEC  
Netherlands

Development and validation of a CCD cosmic ray impact simulator against Gaia in-orbit data

## TEACHING

<b>University of Liège</b> 2019 - 2021	<b>Mechanics 101</b> Tutorials - Undergraduate From Newtonian mechanics to the study of solids' motion <i>Professor: Pierre Dauby</i>
	<b>Mathematical modeling for the environment</b> Tutorials - Graduate Dynamical modeling of populations and their environments <i>Professor: Marilaure Grégoire</i>
	<b>Astronomical observations</b> Tutorials and Lectures - Graduate Telescope observations and applications to Astrophysics (including practical sessions at the Oukaimeden observatory, Morocco) <i>Professor: Emmanuel Jehin</i>

## GRANTS

<b>2021</b> F.R.S.-FNRS	<b>FRIA Doctoral scholarship</b> 2 years full-time research funding
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## SKILLS

Languages	Programming
English and French (fluent) Spanish (intermediate)	Python C++ C Julia JS - HTML - CSS LaTeX git

## PUBLICATIONS

### First-authored

- 2022 **Spectroscopic anatomy of a polar spot on an M4-type star**  
[Garcia L. J.](#) et al. *in prep.*
- 2022 **nuance: Transit detection in the presence of stellar variability and correlated noise**  
[Garcia L. J.](#), Foreman-Mackey, D. *in prep. for A&A*
- 2022 **HST/WFC3 transmission spectroscopy of the cold rocky planet TRAPPIST-1h**  
[Garcia L. J.](#), Moran, S. E., Rackham, B. V., et al. *A&A*, 665, A19
- 2022 **prose: a Python framework for modular astronomical images processing**  
[Garcia L. J.](#), Timmermans, Mathilde, Pozuelos, Francisco J. et al. *MNRAS* 509 4817-4828
- 2018 **Validation of a CCD cosmic ray event simulator against Gaia in-orbit data**  
[Garcia L.](#), Prod'homme T., Lucsanyi D. et al. *Proc. SPIE* 10709

### Other collaborations

- 2023 **Precise near-infrared photometry, accounting for precipitable water vapour at SPECULOOS Southern Observatory**  
Pedersen, P. P., Murray, C. A., Queloz, D., et al. (including [Garcia L. J.](#)) *MNRAS*, 518, 2661
- 2022 **Two temperate super-Earths transiting a nearby late-type M dwarf**  
Delrez, L., Murray, C. A., Pozuelos, F. J., et al. (including [Garcia L. J.](#)) *A&A*, 667, A59
- 2022 **SPECULOOS Northern Observatory: Searching for Red Worlds in the Northern Skies**  
Burdanov, A. Y., de Wit, J., Gillon, M., et al. (including [Garcia L. J.](#)) *PASP*, 134, 105001
- 2022 **TESS discovery of a sub-Neptune orbiting a mid-M dwarf TOI-2136**  
Gan, T., Soubkiou, A., Wang, S. X., et al. (including [Garcia L. J.](#)) *MNRAS*, 514, 4120
- 2022 **Observation scheduling and automatic data reduction for the Antarctic Telescope, ASTEP+**  
Dransfield, G., Mékarnia, D., Triaud, A. H. M. J., et al. (including [Garcia L. J.](#)) *Proc. SPIE*, 12186, 121861F
- 2022 **A study of flares in the ultra-cool regime from SPECULOOS-South**  
Murray, C. A., Queloz, D., Gillon, M., et al. (including [Garcia L. J.](#)) *MNRAS*, 513, 2615
- 2022 **Complex Modulation of Rapidly Rotating Young M Dwarfs: Adding Pieces to the Puzzle**  
Günther, M. N., Berardo, D. A., Ducrot, E., et al. (including [Garcia L. J.](#)) *AJ*, 163, 144
- 2022 **TOI-1442 b and TOI-2445 b: two ultra-short period super-Earths around M dwarfs**  
Morello, G., Parviainen, H., Murgas, F., et al. (including [Garcia L. J.](#)) *arXiv e-prints*, arXiv:2201.13274
- 2022 **TOI-2257 b: A highly eccentric long-period sub-Neptune transiting a nearby M dwarf**  
Schanche, N., Pozuelos, F. J., Günther, M. N., et al. (including [Garcia L. J.](#)) *A&A*, 657, A45
- 2021 **A large sub-Neptune transiting the thick-disk M4 V TOI-2406**  
Wells, R. D., Rackham, B. V., Schanche, N., et al. (including [Garcia L. J.](#)) *A&A*, 653, A97
- 2021 **Six transiting planets and a chain of Laplace resonances in TOI-178**  
Leleu, A., Alibert, Y., Hara, N. C., et al. (including [Garcia L. J.](#)) *A&A*, 649, A26

- 2021 **SPECULOOS: Ultracool dwarf transit survey. Target list and strategy**  
Sebastian, D., Gillon, M., Ducrot, E., et al. (including Garcia L. J.) *A&A*, 645, A100
- 2020 **Development of the SPECULOOS exoplanet search project**  
Sebastian, D., Pedersen, P. P., Murray, C. A., et al. (including Garcia L. J.) *Proc. SPIE*, 11445, 1144521
- 2020  **$\pi$  Earth: A 3.14 day Earth-sized Planet from K2's Kitchen Served Warm by the SPECULOOS Team**  
Niraula, P., Wit, J. de., Rackham, B. V., et al. (including Garcia L. J.) *AJ*, 160, 172
- 2020 **A super-Earth and a sub-Neptune orbiting the bright, quiet M3 dwarf TOI-1266**  
Demory, B.-O., Pozuelos, F. J., Gómez Maqueo Chew, Y., et al. (including Garcia L. J.) *A&A*, 642, A49
- 2020 **GJ 273: on the formation, dynamical evolution, and habitability of a planetary system hosted by an M dwarf at 3.75 parsec**  
Pozuelos, F. J., Suárez, J. C., de Elía, G. C., et al. (including Garcia L. J.) *A&A*, 641, A23
- 2020 **Photometry and performance of SPECULOOS-South**  
Murray, C. A., Delrez, L., Pedersen, P. P., et al. (including Garcia L. J.) *MNRAS*, 495, 2446

## COMMUNICATIONS

★ denotes invited

- March 2023 ★ **prose: A Python package to build astronomical image processing pipelines**  
Feb. 2013 Garcia L. J. *VAST (online)*  
Talks *EMAC Workshop (online)*
- July 2022 **HST/WFC3 transmission spectroscopy of the cold rocky planet TRAPPIST-1h**  
Talk Garcia L. J., Moran S., Rackham B. V. et al. *NAM 2022 (Warwick, UK)*
- July 2022 **The bright future of PSF photometry using convolutional neural networks**  
Poster Garcia L. J. *NAM 2022 (Warwick, UK)*
- May 2022 **Transmission spectroscopy of the cold rocky planet TRAPPIST-1h**  
Poster Garcia L. J., Moran S., Rackham B. V. et al. *Exoplanet IV (Las Vegas, USA)*
- May 2020 **TRAPPIST-1h transmission spectrum: Knowing the star**  
Talk Garcia L. J., Moran S., Rackham B. V. et al. *SAG21 symposium (online)*
- Jun. 2019 ★ **specphot: a suite for SPECULOOS data analysis**  
Poster Garcia L. J. & the SPECULOOS team *TRAPPIST-1 conference (Liège, Belgium)*

## MISCELLANEOUS

Ultra running - Illustration