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

University of Liège
2019 - 2021

Mechanics 101 Tutorials - Undergraduate
From Newtonian mechanics to the study of solids' motion
Professor: Pierre Dauby

Mathematical modeling for the environment Tutorials - Graduate
Dynamical modeling of populations and their environments
Professor: Marilaure Grégoire

Astronomical observations Tutorials and Lectures - Graduate
Telescope observations and applications to astrophysics (including practical sessions at the Oukaimeden observatory, Morocco)
Professor: Emmanuel Jehin

SOFTWARE DEVELOPMENTS

prose
Image Processing
Python, LaTeX
A Python package to build image processing pipelines. Developed for Astronomy to enable transparent research and reproducible products.

nuance
Signal Processing
Python, JAX
A Python package to detect exoplanetary transits in the presence of stellar variability and instrumental noises.

SPECULOOS - portal
Web application
HTML-CSS-JS (VueJS)
A web-based portal to monitor the SPECULOOS transit survey nightly observations (interactive schedule, data visualization, comments and flagging system, diagnostics, and more)

SPECULOOS - workflows
Data analysis
Python, snakemake
Developement of data analysis workflows for the automatic analysis and reporting of SPECULOOS observations (manager of the related working group).

TRAPPIST - ESO public release
Data analysis
Python, snakemake, prose
Reduction and first release of the TRAPPIST telescope photometric products (beginning 2023 with ESO).

Related skills: Python C++ C Julia JS - HTML - CSS LaTeX git

COMMUNICATIONS

⋆ denotes invited

July 2022 — Talk
HST/WFC3 transmission spectroscopy of the cold rocky planet TRAPPIST-1h
Garcia L. J., Moran S., Rackham B. V. et al. *NAM 2022 (Warwick, UK)*

July 2022 — Poster
The bright future of PSF photometry using convolutional neural networks
Garcia L. J. *NAM 2022 (Warwick, UK)*

May 2022 — Poster
Transmission spectroscopy of the cold rocky planet TRAPPIST-1h
Garcia L. J., Moran S., Rackham B. V. et al. *Exoplanet IV (Las Vegas, USA)*

May 2020 — Talk
TRAPPIST-1h transmission spectrum: Knowning the star
Garcia L. J., Moran S., Rackham B. V. et al. *SAG21 symposium (online)*

Jun. 2019 ⋆ — Poster
specphot: a suite for SPECULOOS data analysis
Garcia L. J. & the SPECULOOS team *TRAPPIST-1 conference (Liège, Belgium)*

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*

+18 other collaborations

MISCELLANEOUS

Ultra running - Illustration

$$\sqrt{81} = 8 + 1$$