

Laboratoire d'Astrophysique de Marseille

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✉ faustine.cantalloube@lam.fr**Researcher in instrumentation for astrophysics**

High-contrast imaging of exoplanets and disks with current and future instruments

Current and previous positions

- Since 2021 **Associate Researcher (CRCN), CNRS**
Laboratoire d'Astrophysique de Marseille (LAM), France
- 2017 - 2020 **Post-doctoral researcher**
Max Planck Institute for Astronomy (MPIA), Heidelberg, Germany
- Since 2019 **Guest researcher**
University of Liège, STAR Institute, Belgium.
- 2016 **Guest researcher** (Fizeau grant, 2 months)
European Southern Observatory (ESO), Santiago, Chile
- 2013 - 2016 **PhD** (University Grenoble-Alpes, ED 47)
Detection and characterization of exoplanets in high contrast images ([link](#))

Education

- 2012 -2013 **Master 2** Astronomy, Astrophysics and Engineering Sciences
Observatoire de Paris-Meudon, France
- 2010 - 2012 **Engineering degree** in optics
Master 2 Optics, from science to technology
Institut d'Optique Graduate School, Palaiseau, France
- 2008 - 2010 **Magistère (L3, M1)** Fundamental Physics
Université Paris 11, Orsay, France

Supervision

- 2021 **Supervision M1**, Alexandre Kreit (1.5 months) at LAM:
Sparse Aperture Masking with the VLT/SPHERE instrument.
- Sept. 2020 **Supervision MSc/M2**, Célia Desgrange (5-months) at MPIA:
Applying cutting-edge image processing on protoplanetary disks.
- Since 2018 **Co-supervision PhD**, Samantha Brown, with Prof. T. Henning (MPIA):
Observation of circumstellar disk in visible, infrared and sub-millimeter
- Mars 2018 **Supervision MSc/M2**, Maxime Quesnel (6 months) at MPIA:
Improving the performance of the ANDROMEDA image-processing algorithm
- 2018 - 2020 **Co-supervision PhD**, Benoit Pairet, with Prof. L. Jacques (UC Louvain):
Signal processing methods for planetary systems imaging: designing and solving regularized inverse problems for exoplanets and circumstellar disks imaging

Awards and Distinctions

- Mar. 2017 ASHRA funding (2k€) and CIAS funding (1k€) to organize the very first annual NYRIA workshop. Paris-Meudon observatory, France.
- Nov. 2014 Invitation to participate to the Santander Summer School *Reaching the limits of the sky: astronomical instrumentation in the 21st century*, Santiago, Chile.

Instrumentation projects and responsibilities

- Since 2016 **Very Large Telescope, SPHERE instrument** (commissioned in 2014)
- Core team of the guaranteed time large survey SHINE (PI: J.L. Beuzit)
 - Responsible for the working group Statistical Tools
 - Coordinator of the *Sparse Aperture Masking* observing mode
 - High-contrast simulations for final performance assessment
- Since 2017 **Extremely Large Telescope, METIS instrument** (first-light for 2026)
- Adaptive optics: simulations, high-contrast performance estimation
 - Coordinator of the ELT Working Group on High-Contrast Imaging (ESO)
 - METIS fellow since December 2021
- Since 2018 **Coordinator of the Exoplanet Imaging Data Challenge**
- Design of the challenge, data preparation and communication
 - [website](#) and first phase [publication](#)

Professional services in astrophysics

- 2021 **Chair of the workshop** *Environmental Transition*
French Society of Astronomy and Astrophysics annual conference (SF2A).
- 2021 **SOC of the workshop** *Forging a Sustainable Future*
European Society of Astronomy annual conference (EAS).
- 2021 **Guest editor** for a Special Issue on Astrophotonics for JOSA.
- Since 2020 **Core member** of the collective *Astronomers for Planet Earth*
- 2018-2020 **Member of the STAC** (Strategic Time Allocation Committee) at MPIA.
- Since 2017 **Referee** for Astronomy & Astrophysics (A&A), Astrophysical Journal (ApJ).
- 2016 **Creation of NYRIA** (*Network for Young Researcher in Instrumentation for Astrophysics*): currently 60 members from master to postdoctoral researchers.
Organization of yearly meetings in institutes strongly involved in instrumentation.
- Since 2016 **Chair of the Workshop** *Post-processing for High-contrast imaging*
Harnack Hause MPG, Berlin, Germany.

Scientific publications

- **55** refereed publications: **5** as a first author, **5** as a second author.
- **14** conference proceeding in instrumentation (SPIE and AO4ELT): **3** as a first author.
- **5** non-refereed publications: **1** as a first author.
- Software for the community: ANDROMEDA (IDL)
Implemented in the SPHERE-Data Center and in the VIP open-source package.
- *Nombre total de citations : 1500, hors auto-citations (H-index: 21).*

Main outreach activities

- 2021 **Organization of an Astrophysics workshop in the Marseille Prison**
[Champ Libre organization](#).
- 2014 - 2015 **Instructor at the national science museum, Palais de la Découverte**,
Physics department (Paris, France).
- 2015 - 2017 **Tutor to qualify activity leaders for 'Astro Vers Tous'** (Astro towards everyone) in the context of the national French organization [Planète Science](#).
- Since 2009 **Numerous general public lectures**: Politique des Sciences 2021, France Culture Radio 2021, Togo Astronomy Festival 2020, France Inter Radio 2020, Festival d'astronomie de Fleurance 2018, Science Slams, Organization of Pint of Science Heidelberg 2017 and 2018, Organization of Astronomy on Tap Heidelberg 2017 and 2018, Rencontre Ciel & Espace 2014, Pint of Science Grenoble 2015, visits in high-schools and various Local and national astronomy organizations.