

Antonin Corinaldi

1st year PhD student in cosmology

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in A. Corinaldi 🔗 antonincorinaldi 🌐 Antonin Corinaldi

Education

PhD in Astronomy and Astrophysics <i>Université Paris Cité</i>	2025 – 2028
Post-master research year (post-master professional gap year) <i>Université Paris-Saclay</i>	2024 – 2025
Master's degree (M2) in Astronomy and Astrophysics <i>Observatoire de Paris</i> <ul style="list-style-type: none">◦ Final grade : 15.5/20 ; final ranking : 10/33	2023 – 2024
Magistère in Fundamental Physics, Orsay <i>Université Paris-Saclay</i>	2021 – 2024
Scientific preparatory classes for Grandes Écoles, PCSI / PC* <i>Lycée Michelet – Vanves</i>	2019 – 2021
Scientific Baccalauréat , highest honors (final grade : 18.71/20) <i>Lycée Montesquieu – Le Mans</i>	2019

Research Experience

PhD thesis in cosmology <i>CEA Astrophysics Department, CosmoStat team, Paris-Saclay</i> <ul style="list-style-type: none">◦ Supervisors : Martin Kilbinger and Sandrine Codis◦ Name of the thesis : "Uncovering the 3D cosmological tidal field of dark matter"	2025 – 2028
Post-master research internship (3 months of preparation and 6 official months) <i>CEA Astrophysics Department, CosmoStat team, Paris-Saclay</i> <ul style="list-style-type: none">◦ Supervisors : Martin Kilbinger and Calum Murray◦ Topic : cosmology and galaxy survey science, 3D measurement of galaxy intrinsic alignment with UNIONS and Euclid, data analysis, simulation-based inference, Python programming◦ Member of the UNIONS and Euclid collaborations (member of Euclid's "intrinsic alignment" Key Project)	2024 – 2025
M2 research internship (4 months) <i>Institut de Recherche en Astrophysique et Planétologie (IRAP), Toulouse</i> <ul style="list-style-type: none">◦ Supervisor : Isaac Tutusaus◦ Topic : cosmology and galaxy survey science, forecasts on cosmological constraints from Euclid's future photometric galaxy surveys using 3x2pt analysis (statistical inference with weak lensing, galaxy clustering, and cross-correlations), study of the impact of photometric redshift measurement errors on cosmology, Python programming	2024

M2 numerical project (15 sessions of 3 hours)

2023 – 2024

Institut d’Astrophysique Spatiale (IAS), Orsay

- **Supervisor** : Marian Douspis
- **Topic** : cosmology, characterization of galaxy cluster catalogues detected via the Sunyaev–Zel’dovich effect using artificial intelligence (artificial and convolutional neural networks), Python programming

M1 research internship (3 months)

2023

Royal Observatory of Edinburgh, Scotland

- **Supervisor** : Yan-Chuan Cai (co-supervisor : Stéphane Ilic)
- **Topic** : cosmology, creation of a numerical model for cosmic supervoid formation and theoretical prediction of the associated integrated Sachs–Wolfe effect, Python programming
- Recipient of the **IDEX excellence scholarship**

L3 research internship (6 weeks)

2022

Laboratoire Irène Joliot-Curie (IJCLab), Orsay

- **Supervisor** : Stéphane Ilic
- **Topic** : cosmology, analysis of cosmic microwave background maps and study of the impact of the epoch of reionization on constraints of the reionization parameter τ for Simons Observatory and CMB-S4 (statistical inference), Python programming

Skills

Programming languages : Python, C, C++, Fortran, HTML**Astrophysics codes**: *CosmoSIS* pipeline (M2 internship), *Class* numerical code (L3 internship)**Other digital tools**: *GitHub* environment, \LaTeX (scientific report writing during L3, M1, M2 internships and projects, writing of a scientific paper), computing cluster (HPC)**Languages** : French (native), English (C1), Spanish (B2), Italian (B2)

Oral Presentations

Research talks :

- WL-SHE Euclid meeting, Marseille (France), 15-minute talk *October 2025*
- UNIONS meeting, Leiden (Netherlands), 20-minute talk on my post-master internship *March 2025*
- Meeting with IRAP cosmology group, Pic du Midi, 20-minute talk on my M2 internship *July 2024*
- IRAP internship presentations, 10-minute talk on my M2 internship *May 2024*
- *My internship in 180 seconds*, IJCLab, 3-minute talk on my L3 internship *July 2022*

Conferences (attendee) :

- Euclid-France, 13th symposium, CEA Paris-Saclay *January 2025*
- Euclid summer school “Rodolphe Clédassou”, Hendaye, student in cycle 1 and cycle 2 obs (presentation of a poster in cycle 2) *August 2024 and 2025*
(1 month)
- Meeting on the combination of cosmological data from galaxy surveys, Institut d’Astrophysique de Paris *June 2024*
- National CMB-France symposium, Institut d’Astrophysique de Paris *June 2022*

Science outreach:

- Conference for ALCOR members, 15-minute presentation on my L3 internship *December 2022*

Teaching

TD teacher in electromagnetism and statistical physics (L3) <i>Université Paris Cité</i>	2026
Private tutoring in physics, mathematics, and chemistry for final-year high school students	2020 – 2023

Personal Involvement

Member of the French Astronomy Association (AFA) <i>Animator in astronomy during "Paris sous les étoiles" (from June to August 2025)</i> <i>Volunteer at the Rencontres du Ciel et de l'Espace (November 2024)</i> <i>Animator "Débusquez les infox" in middle schools and libraries</i>	2024 - 2025
Vice-secretary of the ALCOR association (Astronomy and Lights of the Orsay Campus) <i>Volunteer with the association at the Fleurance Astronomy Festival (August 2022, 2023, 2024 and 2025)</i>	2023 - 2024
Member of a collective for the Jacques Tati cinema in Orsay <i>Organization of film debates</i>	2023 - 2024
Cultural coordinator of the "Photon" student association <i>Organization of cultural outings in Paris</i>	2022 - 2023

Interests

Music: classical guitar solo and ensemble (8 years at Le Mans Conservatory, awarded the Music Studies Certificate in 2019), folk guitar

Sports: competitive tennis (best ranking: 15), jogging, climbing, surfing, trail running

Travel: London, United States (Boston, Chicago, Los Angeles, New York), Spain (Seville), Italy, Sardinia, Sicily, Scotland (Edinburgh), Belgium (Bruxelles)

Other hobbies: reading, writing, philosophy, drawing

References

Martin Kilbinger, CEA Astrophysics Department, CosmoStat team, Saclay (current post-master internship supervisor)
◦ email: ✉ martin.kilbinger@cea.fr

Isaac Tutusaus, Institut de Recherche en Astrophysique et Planétologie (IRAP), Toulouse (M2 internship supervisor)
◦ email: ✉ isaac.tutusaus@irap.omp.eu

Marian Douspis, Institut d'Astrophysique Spatiale (IAS), Orsay (M2 numerical project supervisor)
◦ email: ✉ marian.douspis@universite-paris-saclay.fr

Mathieu Vincendon, Institut d'Astrophysique Spatiale (IAS), Orsay (M2 director)
◦ email: ✉ mathieu.vincendon@universite-paris-saclay.fr