

# Antonin Corinaldi

*Post-master intern in cosmology (PhD student starting in October 2025)*

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in A. Corinaldi ([see my past internship reports here](#))   🔗 antonincorinaldi

🌐 Antonin Corinaldi ([see my current internship project here](#))

## Education

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**Post-master research year** (post-master professional gap year) 2024 – 2025  
*Université Paris-Saclay*

**Master's degree (M2) in Astronomy and Astrophysics** 2023 – 2024  
*Observatoire de Paris*

- Final grade : 15.5/20 ; final ranking : 10/33
- Main subjects : relativistic and classical gravitation, cosmology, instruments and observations, radiation, astrophysical fluids, interstellar medium and star formation, galaxies, compact objects, data analysis (Python) and scientific computing (Fortran) in lectures and practicals
- 1-day visit to the Nançay Radio Observatory and 1-week observing internship at the Haute-Provence Observatory

**Magistère in Fundamental Physics, Orsay** 2021 – 2024  
*Université Paris-Saclay*

- Courses in 1<sup>st</sup> year (Bachelor 3) and 2<sup>nd</sup> year (Master 1) : quantum mechanics, analytical mechanics, electromagnetism, astrophysics, classical and quantum statistical physics, introduction to particle physics, atomic and molecular physics, condensed matter physics, cosmology, mathematical physics and general relativity, group theory, soft matter, nonlinear physics, plasma physics, computing courses / practicals / projects (Python, C, C++), epistemology
- In 3<sup>rd</sup> year (Master 2) : 1-week training in economics and management

**Scientific preparatory classes for Grandes Écoles, PCSI / PC\*** 2019 – 2021  
*Lycée Michelet – Vanves*

**Scientific Baccalauréat**, highest honors (final grade : 18.71/20) 2019  
*Lycée Montesquieu – Le Mans*

## Research Experience

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**Post-master research internship** (3 months of preparation and 6 official months) 2024 – 2025  
*CEA Astrophysics Department, CosmoStat team, Paris-Saclay*

- **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)

**M2 research internship** (4 months) 2024  
*Institut de Recherche en Astrophysique et Planétologie (IRAP), Toulouse*

- **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

**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  $\tau$  for Simons Observatory and CMB-S4 (statistical inference), Python programming

## Skills

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**Programming languages** : Python, C, C++, Fortran

**Astrophysics codes**: *CosmoSIS* pipeline (M2 internship), *Class* numerical code (L3 internship)

**Other digital tools**: *GitHub* environment, *L<sup>A</sup>T<sub>E</sub>X* (scientific report writing during L3, M1, M2 internships and projects, writing of a scientific paper)

**Languages** : French (native), English (C1), Spanish (B2), Italian (B2)

## Oral Presentations

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**Research talks** :

- 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, 13<sup>th</sup> symposium, CEA Paris-Saclay January 2025
- Euclid summer school “Rodolphe Clédassou”, Hendaye, student in cycle 1 August 2024, two weeks
- 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

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**Private tutoring in physics, mathematics, and chemistry for final-year high school students** 2020 – 2023

## Personal Involvement

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**Member of the French Astronomy Association (AFA)** 2024 - 2025  
*Animator in astronomy during "Paris sous les étoiles" (from June to August 2025)*  
*Volunteer at the Rencontres du Ciel et de l'Espace (November 2024)*  
*Animator "Débusquez les infox" in middle schools and libraries*

**Vice-secretary of the ALCOR association (Astronomy and Lights of the Orsay Campus)** 2023 - 2024  
*Volunteer with the association at the Fleurance Astronomy Festival (August 2022, 2023, 2024 and 2025)*

**Member of a collective for the Jacques Tati cinema in Orsay** 2023 - 2024  
*Organization of film debates*

**Cultural coordinator of the "Photon" student association** 2022 - 2023  
*Organization of cultural outings in Paris*

## Interests

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**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), Spain (Seville), Italy, Sardinia, Sicily, Scotland (Edinburgh)

**Other hobbies:** reading, writing, philosophy, drawing

## References

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**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)  
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