
Title of the job offer: Analysis of clusters and proto-clusters at $z > 1.5$

Job offer from the institut de physique du globe de Paris | CNRS UMR 7154

Researcher in	astrophysics
Duration	One year, renewable
Affectation	Astroparticule et Cosmologie
Salary	The salary will depend on experience
Date of publication	21/01/2023
Starting date	Between 1st April 2023 and 31st December 2023
Location	Astroparticule et Cosmologie, 10, rue Alice Domon et Leonie Duquet, 75013 Paris

The institut de physique du globe de Paris

The Astroparticle and Cosmology (APC; <http://apc.u-paris.fr/>) laboratory of University Paris Cité seeks applications for a postdoctoral fellowship in the science with large galaxy surveys, with specific emphasis on participation in the European Space Agency's (ESA) *Euclid* Mission in synergy with the Rubin Observatory Legacy Survey of Space and Time (LSST). Planned for launch in 2023, the *Euclid* mission will survey the extragalactic sky from the Earth-Sun Lagrange point 2 with the aim of constraining the properties of dark energy and probing galaxy formation and evolution. Rubin will begin operations in 2024, surveying the entire Southern sky over the course of its ten-year survey.

The *Euclid* and Rubin groups at APC are involved in both the science analysis of the surveys and in the development of the *Euclid* science ground segment. We are particularly active in galaxy and galaxy cluster science and the postdoctoral fellow will study clusters and proto-clusters at $z > 1.5$ in preparation for the *Euclid* and Rubin/LSST combined analysis. There is a strong synergy between the *Euclid*, Rubin and CMB efforts. Experience with astronomical imaging and image analysis, scientific computing, statistics and data analysis in the context of galaxy formation and evolution, and cosmology is recommended.

Team Department

The postdoctoral fellow will work in the Cosmology group at APC.

Missions

> Presentation of the missions within the context :Formation and evolution of galaxies, clusters of galaxies, estimation of photometric redshifts and processing and analysis of astronomical images in optics and/or infrared, and/or processing and analysis of galaxy spectra. Experience in scientific computing, statistics and data analysis in the context of cosmology and astrophysics is recommended.

> Number of agents 1

> Position of responsibility No



> For researchers: research project in the context of the Labex UniversEarth

Activities

> Description of the activities

Analysis of galaxy clusters and proto-clusters at $z > 1.5$. The postdoctoral fellow will work with Simona Mei (<https://www.linkedin.com/in/simona-mei-1721bb3a/>) at the APC laboratory in collaboration with Emanuele Daddi at the AIM laboratory (<https://osups.universite-paris-saclay.fr/en/unit/aim>). S/he will compare the fractions of quenched and early-type galaxies and the gas content of clusters and protoclusters at $z > 1.5$ detected with different techniques, in preparation for the exploitation of future observations with the Euclid Mission and the Vera C. Rubin Observatory Legacy Survey of Space and Time (LSST).

Expected Skills

> Specific training PhD in astrophysics

> Computer tools : Candidates must have a Ph.D. in astrophysics with a specialization in one or several of the following scientific themes: formation and evolution of galaxies, clusters of galaxies, estimation of photometric redshifts and processing and analysis of astronomical images in optics and/or infrared, processing and analysis of galaxy spectra. Experience in scientific computing, statistics and data analysis in the context of cosmology and astrophysics is recommended.

> Professional qualities : team work skills

Obligations and risks

> Work schedules 100% normal office hours, from Monday to Friday

> Work attendance a

> Professional trips : conferences and collaboration meetings in France and abroad

Training and experience required

> Maximum of 5 years experience

> Education level or diploma : PhD in astrophysics

How to apply

> CV and cover letter

> A description of how the candidate understands his research project at the laboratory and the commitment to conerge on the project goals.

> Deadlines for applications : February 10th 2023

> Contacts (2 contacts are required for the interview): two reference letters sent directly to Simona Mei (mei@apc.in2p3.fr)