

## Postdoctoral Position in Reionisation, large scale structures and CMB

- IAS, Orsay, France
- **Deadline on Dec 15, 2022**

### **Job description:**

Applications are invited for a postdoctoral research position on the physics and impact of reionisation history in CMB and large scale cosmological analyses, within the French ANR funded project BATMAN (Better Accuracy and robusTness for Mass Assessment of Neutrino). The project aims at using the combined current CMB observations with better and coherent modelling of astrophysics signals and systematics to constrain the neutrino mass and extensions of the standard  $\Lambda$ CDM model.

The post is available for a fixed-term duration of 24 months. The expected start is in spring 2023 at the earliest and no later than December 2023. Candidates must hold a PhD in Physics or Astronomy by the date of the appointment.

### **Project description:**

The post holder will work with Marian Douspis to revisit the constraints on the reionisation history from current observations and how it can be described by a generic model with physical parameters (in comparison with simulations if needed) which will be used as input in CMB probes of reionisation (TT damping, EE bump, kSZ spectrum), and potential applications to upcoming 21cm observations.

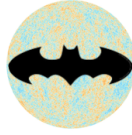
The successful candidate will work on the modelling of secondary anisotropies such as tSZ, kSZ and CIB (cross)spectra given the obtained description of the reionisation history, and gas physics properties from Toulouse team. the candidate will work on the observational estimation of these spectra from current millimetre experiments. The candidate will work in close collaboration with IJClab team to provide coherent spectra in multi-experiment CMB analyses.

### **Skills:**

We especially encourage applicants with expertise on the reionisation epoch, the large-scale structures as cosmological probes and observational cosmology. We seek applicants with skills in modelling, millimetre observations, data analysis and/or machine learning techniques. Added experience in other non CMB reionisation observations or simulations will be considered.

The postdoc will collaborate with the respective research teams, local and remote, participate in the work of specific Working Groups and attend regular teleconferences, when the postdoc will periodically discuss work progress. The candidate will contribute to publications and scientific presentations, and to be able to provide new ideas for the research project.

The candidate should be able to communicate in English, both spoken and written.



### **Work Context:**

The postdoc will be integrated within the research team of the Institut d'Astrophysique Spatiale which is located in the Paris-Saclay University (Orsay, France).

The project contains three nodes: one for the study of secondary anisotropies, mainly reionisation epoch, and their impact on cosmological constraints (IAS, Orsay), one for the study of gas physics involved in CMB analyses (IRAP, Toulouse), one of the building of coherent likelihood of combined CMB observations and modelling of extension of LCDM (IJCLab, Orsay-Paris).

The position will thus involve team work and close collaboration with the partner teams

Included benefits: health insurance, holidays, retirement scheme.

### **Application:**

**Deadline for application:** 15 december 2022

The application should include a cover letter, a research statement, a CV, a list of selected publications (max 10) in a single file in PDF format to be sent, by email only to [batman-anr-admin@ias.u-psud.fr](mailto:batman-anr-admin@ias.u-psud.fr), stating in the subject: **PostDoc-Reio**

**2 Letters of Reference should be sent** at the same email address.

We seek a diverse pool of applicants and we will consider all applications on equal basis.

Candidates can contact the BATMAN team at [batman-anr-admin.ias@universite-paris-saclay.fr](mailto:batman-anr-admin.ias@universite-paris-saclay.fr) and browse the BATMAN website: <https://batman-anr.ias.universite-paris-saclay.fr/>