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## IAP - Institut d'astrophysique de Paris

Rapport Hcéres

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Research evaluation

REPORT ON THE RESEARCH UNIT:  
Institut d'Astrophysique de Paris (IAP)

UNDER THE SUPERVISION OF THE  
FOLLOWING INSTITUTIONS AND  
RESEARCH BODIES:

Sorbonne université

Centre national de la recherche scientifique -  
CNRS

**ÉVALUATION CAMPAIGN 2017-2018**  
GROUP D



In the name of Hcéres<sup>1</sup>:

Michel Cosnard, President

In the name of the experts committee<sup>2</sup>:

Stéphane Basa, Chairman of the  
committee

Under the decree No.2014-1365 dated 14 November 2014,

<sup>1</sup> The president of Hcéres "countersigns the evaluation reports set up by the experts committees and signed by their chairman." (Article 8, paragraph 5);

<sup>2</sup> The evaluation reports "are signed by the chairman of the experts committee". (Article 11, paragraph 2).

This report is the sole result of the unit's evaluation by the experts committee, the composition of which is specified below. The assessments contained herein are the expression of an independent and collegial reviewing by the committee.

## UNIT PRESENTATION

<b>Unit name:</b>	Institut d'Astrophysique de Paris
<b>Unit acronym:</b>	IAP
<b>Requested label:</b>	UMR
<b>Application type:</b>	Renewal
<b>Current number:</b>	7095
<b>Head of the unit (2017-2018):</b>	Mr Francis BERNARDEAU
<b>Project leader (2019-2023):</b>	Mr Francis BERNARDEAU
<b>Number of teams or themes:</b>	5

## COMMITTEE MEMBERS

<b>Chair:</b>	Mr Stéphane BASA, CNRS
<b>Experts:</b>	Ms Sylvie BRAU-NOGUE, CNRS (supporting personnel) Mr Stephen FAIRHURST, Cardiff university, United Kingdom Ms Muriel GARGAUD, CNRS Bordeaux Mr Olivier GODET, université Paul Sabatier (representative of CNU) Mr Roser PELLO, CNRS (representative of CoNRS) Mr Simon WHITE, MPIA Garching, Deutschland
<b>HCERES scientific officer:</b>	Mr Michel TAGGER
<b>Representatives of supervising institutions and bodies:</b>	Ms Laurence REZEAU, Sorbonne université Mr Guy PERRIN, CNRS/INSU

# INTRODUCTION

## HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The "Institut d'Astrophysique de Paris" (IAP) is an "Unité Mixte de Recherche" (UMR7095) of the Sorbonne université and the Centre National de la Recherche Scientifique (CNRS). It is located at 98 bis boulevard Arago, in the 14<sup>th</sup> district of Paris, outside of the main campus of the Sorbonne université, and next to the Parisian campus of the Observatoire de Paris.

IAP was created in 1936 as part of a "service de recherche d'astrophysique" for the treatment and study of observation documents. It later became a proper laboratory, "Unité Propre de Recherche" (UPR), of CNRS created in 1939. It remained an UPR until 2000 when it became an UMR.

Since 2005, IAP is an "Observatoire des Sciences de l'Univers" (OSU) in charge of national services in the domain of Astronomy and Astrophysics. As such it is a component of the Sorbonne université, a so-called "école interne", although its teaching responsibilities are mainly exerted within the "UFR de physique" of the university.

## MANAGEMENT TEAM

IAP is managed by Mr Francis BERNARDEAU (researcher seconded by CEA). Two deputy directors assist him:

- Mr Frédéric DAIGNE: more specifically in charge of relations with the university, Labex and education ;
- Mr Karim BENABED: more specifically in charge of the organization and daily life of the unit, and the outreach programs, and one administrative manager, Ms Valérie BONA.

IAP being also an OSU (see previous section), Mr Francis BERNARDEAU is its director.

## HCERES NOMENCLATURE

ST3: earth and space sciences.

## SCIENTIFIC DOMAIN

The scientific domain of IAP ranges from the formation of planetary systems and extra solar planetary searches, to galaxy evolution, the large-scale structure of the universe, the physics of the primordial Universe, the physics of gravitation and high-energy astrophysics. For this the laboratory relies on 5 scientific themes: "Theoretical physics and primordial universe", "Cosmology and large scale structure of the universe", "Exoplanets, stars and interstellar medium", "Galaxy evolution" and "High-energy astrophysics and distant universe". The laboratory also supports several projects, which can be transverse to the scientific themes. The 5 main projects are presently: "Planck-HFI", "Euclid", "SVOM", "Terapix/AstrOmatic" and "simulations and numerical computations".

IAP has no technical capacity to participate in the development and construction of instruments. To overcome this, researchers from the laboratory rely on large observational programs, numerical calculations and advanced analytical methods. The population of IAP researchers is therefore composed of observers, modellers and theorists.

## UNIT WORKFORCE

Unit workforce	Number 30/06/2017	Number 01/01/2019
<b>Permanent staff</b>		
Full professors and similar positions	8	8
Assistant professors and similar positions	10	10

Full time research directors (Directeurs de recherche) and similar positions	18	18
Full time research associates (Chargés de recherche) and similar positions	16	15
Other scientists (“Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.”)	1	1
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	28	25
<b>TOTAL permanent staff</b>	<b>81</b>	<b>77</b>
<b>Non-permanent staff</b>		
Non-permanent professors and associate professors, including emeritus	5	
Non-permanent full time scientists, including emeritus, post-docs	13	
Non-permanent supporting personnel	9	
PhD Students	22	
<b>TOTAL non-permanent staff</b>	<b>49</b>	
<b>TOTAL unit</b>		
	<b>130</b>	

## GLOBAL ASSESSMENT OF THE UNIT

IAP is a laboratory with a nationally and internationally recognized scientific expertise, as evidenced by the very large number of publications (more than 300 publications per year) and national/international recognitions (for example, 4 ERCs awarded). It also covers scientific topics that are clearly identified as top priorities by the scientific community. The laboratory has developed a very dense network of worldwide collaborations, leading to a large number of visitors, which contributes to its national and international recognition. IAP plays also key role in several major space and ground projects, such as Planck, Euclid, SVOM, etc. It has also developed a computer cluster for the post-processing and scientific exploitation of large simulations, the analysis of data from large surveys or complex data sets and formal scientific calculations. This cluster is an important asset for the attractiveness of the laboratory.

Thanks to its central location in town, IAP has also an excellent visibility, consolidated by a real policy of open access to the meeting facilities and a well-structured and documented website. Most of the laboratory members are very active in public outreach. The outreach activity (“Fête de la Science”, public conferences, web-seminar, contact with schools such as “Collège et Lycée” level internships, etc.) is of very high quality, at the laboratory level as well as for projects (Euclid, Planck).

The laboratory is perfectly inserted in its university and plays an important role in the licence and master. It benefits from a very important student pool thanks to its central position in Paris, leading to attract very high quality students.

The laboratory has a very ambitious strategy for the next years and has positioned itself on important projects in which it plays key roles. However, the decrease of the staff numbers, the aging of the research population and the instability of budgets may jeopardize future commitments. In this context, it is likely that the laboratory will need to re-evaluate its priorities and make very clear choices in the near future.

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