LUTH - Laboratoire univers et théories

Rapport Hcéres

Research evaluation

REPORT ON THE RESEARCH UNIT:
Laboratoire Univers et Théorie (LUTH)

UNDER THE SUPERVISION OF THE FOLLOWING INSTITUTIONS AND RESEARCH BODIES:
L'Observatoire de Paris

Université Paris Diderot

Centre national de la recherche scientifique - CNRS

EVALUATION CAMPAIGN 2017-2018
GROUP D

In the name of Hcéres[1]:

Michel Cosnard, President

In the name of the expert committee[2]:

Alessandro Morbidelli, Chairman of the committee

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

[1] The president of Hcéres "countersigns the evaluation reports set up by the expert committees and signed by their chairman." (Article 8, paragraph 5);

[2] The evaluation reports "are signed by the chairman of the expert committee". (Article 11, paragraph 2).

This report is the sole result of the unit's evaluation by the expert 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

Unit name:	Laboratoire Univers et Théorie
Unit acronym:	LUTH
Requested label:	UMR
Application type:	Renewal
Current number:	8102
Head of the unit (2017-2018):	Mr Stéphane MAZEVET
Project leader (2019-2023):	N/A
Number of teams or themes:	4

COMMITTEE MEMBERS

Chair: Mr Alessandro MORBIDELLI, Observatoire de la Côte d'Azur

Experts: Ms Sylvie BRAU-NOGUE, CNRS (supporting personnel)

Mr Christos CHARMOUSIS, CNRS

Mr Pierre HENRI, CNRS (representative of CoNRS)

Mr Mathieu LANGER, IAS (representative of CNU)

Mr Martin WARD, Durham university, United Kingdom

HCERES scientific officer:

Mr Michel MARCELIN

Representatives of supervising institutions and bodies:

Mr Philippe CAVELIER, CNRS

Mr Guy PERRIN, INSU

Mr Didier TIPHENE, Observatoire de Paris

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The laboratory has been created in 2002, when a general reorganization of Observatoire de Paris occurred. All researchers are based in the Meudon site of Observatoire de Paris. The laboratory is both a mixed research unit of CNRS and a department of the observatory.

MANAGEMENT TEAM

Director: Mr Stéphane MAZEVET

Deputy director: Mr Philippe GRANDCLEMENT

HCERES NOMENCLATURE

ST3: Earth and Space science.

SCIENTIFIC DOMAIN

The laboratory is devoted to theoretical astrophysics, using both theoretical formulations and numerical simulations. It is subdivided into four teams focussing respectively on multi-scale astrophysics, cosmology, high energy phenomena and compact objects.

UNIT WORKFORCE

Unit workforce	Number 30/06/2017	Number 01/01/2019
Permanent staff		
Full professors and similar positions	3	2
Assistant professors and similar positions	5	3
Full time research directors (Directeurs de recherche) and similar positions	8	7
Full time research associates (Chargés de recherche) and similar positions	5	5
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)	7	7
TOTAL permanent staff	**29**	**25**
Non-permanent staff		
Non-permanent professors and associate professors, including emeritus	**2**	
Non-permanent full time scientists, including emeritus, post-docs	**10**	
Non-permanent supporting personnel	**2**	

PhD Students	**8**	
TOTAL non-permanent staff	**22**	
TOTAL unit	**51**	

GLOBAL ASSESSMENT OF THE UNIT

LUTH is a relatively small research unit dedicated to theory and simulations of astrophysical objects. Its researchers have very diverse backgrounds ranging from applied mathematics to atomic, nuclear, condensed matter physics, etc. The laboratory is highly productive and not only in terms of published papers.

An important, well recognized activity is the production of numerical codes and libraries which are provided to the astrophysical community and beyond. The computing performed at the laboratory uses all the levels of the GENCI (Grand Équipement National de Calcul Intensif) pyramid and the resulting data are often publicly available. Some members of the laboratory have a strong excellence in their respective fields, recognized with prices and honours, invited lectures in international meetings, research grants.

A real strength of the laboratory is the existence of a strong pool of software engineers, who are allocated on proposal to big numerical projects on a six-month basis, but are also accessible on a flexible schedule for punctual help.

The laboratory evolves without thematic ruptures from the past UMR (Unité Mixte de Recherche) contract to the next. Nevertheless, new scientific opportunities open for future developments. For instance, the new branch of observational astronomy that blossoms with the now-routinely detection of gravitational waves is a real opportunity for a theoretical laboratory at the forefront of studies of relativistic dynamics and high-energy phenomena.

Unfortunately, the laboratory is slowly shrinking in size, due to departures not compensated by new hiring. Some teams are small or will become so and consequently may appear subcritical in the context of the growing national and international competition. The big investment made in the past years for the development of the CTA (Cherenkov Telescope Array) project risks not to pay if not enough people in LUTH remain involved in CTA.

The sub-critical mass of the laboratory becomes evident in CNAP competitions: because it does not allow the laboratory to play the lead role in ANOs (Actions Nationales d'Observation), new personnel is hired for other laboratories even in fields that are/were mainstream LUTH's activities (e.g. extrasolar planets, CTA). To avoid that this situation repeats, it is important that the laboratory federates efforts in order to keep a critical mass in some well-identified key sectors. Also, the laboratory should use its various research grants and the post-doctoral programs of Observatoire de Paris and PSL (Paris Sciences et Lettres university) to attract very strong candidates for the future permanent position competitions at the local and national levels.

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