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LAM - Laboratoire d'astrophysique de Marseille

Rapport Hcéres

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HCERES

High Council for the Evaluation of Research
and Higher Education

Department of Research Evaluation

report on research unit:

Laboratoire d'Astrophysique de Marseille

LAM

under the supervision of
the following institutions
and research bodies:

Aix-Marseille Université

Centre National de la Recherche Scientifique - CNRS

Evaluation Campaign 2016-2017 (Group C)

HCERES

High Council for the Evaluation of Research
and Higher Education

Department of Research Evaluation

In the name of HCERES,¹

Michel Cosnard, president

In the name of the experts committee,²

Daniel Rouan, chairman of the committee

Under the decree N°2014-1365 dated 14 november 2014,

¹ The president of HCERES "countersigns the evaluation reports set up by the experts 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)

Evaluation report

This report is the sole result of 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 name: Laboratoire d'Astrophysique de Marseille

Unit acronym: LAM

Label requested: UMR

Current number: UMR7326

**Name of Director
(2016-2017):** M. Jean-Gabriel CUBY

**Name of Project Leader
(2018-2022):**

Expert committee members

Chair: Mr Daniel ROUAN, CNRS

Experts:

- Ms Marie-Christine GONTHIER, CNRS (representative of supporting personnel)
- Mr George HELOU, IPAC, USA
- Ms Simona MEI, Université Paris 7 (representative of the CNU)
- Mr Benoît MOSSER, Observatoire de Paris (representative of the CoNRS)
- Mr Roger PONS, CNRS
- Mr Christophe SOTIN, Jet Propulsion Laboratory, USA
- Mr Farrokh VAKILI, Observatoire de la Côte-d'Azur (representative of the CNAP)
- Mr Peter WIZINOWICH, Keck telescope, USA

Scientific delegate representing the HCERES:

Mr Michel BLANC

Representatives of supervising institutions and bodies:

Mr Pierre CHIAPPETTA, AMU

Mr Younis HERMÈS, CNRS - Délégation régionale

Mr Guy PERRIN, INSU-CNRS

Head of Doctoral School:

Mr Conrad BECKER, ED n° 352, "Physique et Sciences de la Matière"

1 • Introduction

History and geographical location of the unit

LAM is a CNRS and AMU research unit and a space laboratory receiving additional support from the Centre National d'Études Spatiales (CNES). LAM is located in Château-Gombert, site de l'Étoile, Marseille. LAM was founded in 2000 following the merging of the Laboratoire d'Astronomie Spatiale (LAS) and of the Observatoire de Marseille.

Management team

Direction: M. Jean-Gabriel CUBY, administrator: Ms Nataly GARCIA, deputy directors: Ms Annie ZAVAGNO, Mr Marc FERRARI, technical director: Mr David LE MIGNANT, mission officer: Mr Christian SURACE.

HCERES nomenclature

ST3, Sciences de la Terre et de l'Univers.

Scientific domains

LAM develops research in: a) astrophysics especially in two fields: extragalactic astronomy and cosmology, on the one hand, and planetary systems, including the solar system, on the other hand; b) innovative instrumentation in optics. The first topic is tackled by different means: theory and numerical models, observations using ground-based telescopes and space instrumentation (particularly spectrographs), data analysis, while the second one is approached mainly by developing prototypes.

Unit workforce

Unit workforce	Number on 30/06/2016	Number on 01/01/2018
N1: Permanent professors and similar positions	25	29
N2: Permanent researchers from Institutions and similar positions	20	22
N3: Other permanent staff (technicians and administrative personnel)	1	-
N4: Other researchers (Postdoctoral students, visitors, etc.)	23	
N5: Emeritus	6	
N6: Other contractual staff (technicians and administrative personnel)	32	
N7: PhD students	31	
TOTAL N1 to N7	198	
Qualified research supervisors (HDR) or similar positions	36	

Unit record	From 01/01/2011 to 30/06/2016
PhD theses defended	34
Postdoctoral scientists having spent at least 12 months in the unit	28
Number of Research Supervisor Qualifications (HDR) obtained during the period	9

2 • Assessment of the unit

Global assessment of the unit

For both its fields of studies, the unit contributes very actively to the development of dedicated instruments either for ground-based observations or for space missions. This concerns especially the design of major spectrographs in key international space missions (such as Euclid) and ground-based telescopes (VLT, SUBARU...) and contribution to High Angular Resolution instruments (VLT, VLTI). For that purpose, it benefits from important and modern facilities, such as clean rooms, space environment simulators, optical machining capability, etc.

From the scientific point of view, the laboratory is divided into three main teams: GECO for galaxies and cosmology, GSP for planetary studies, including extra-solar planets and GRD for the research in innovative optics. This organization reflects a major recent restructuring of the laboratory to reduce from eight to three the number of teams, so as to increase the visibility of its main strengths and to improve the exchanges and the synergy between the individuals or the small groups. Such reorganization was indeed recommended by the previous expert committee.

LAM is undoubtedly among the most successful units in France in the field of Astronomy and Astrophysics. The unit had to face several challenges during the last five years: deployment of the strong national effort that was done to equip the new building with powerful test and manufacturing facilities, drastic reduction of the number of teams from eight to three, and maintaining its unique position in the fast-changing landscape of research in the area of Marseille, with the creation of the new OSU Pytheas and of the new unified Aix-Marseille University (AMU). The unanimous opinion of the expert committee is that all three operations were successful, and have placed LAM at a high level of national and international visibility, with an ability to participate in ambitious projects, especially in the field of space instrumentation.

Highlights include:

- an unquestionable international visibility;
- a very high annual rate of publications (5.4 per FTE per year) and citations (6000 per year);
- an excellent recruitment rate which demonstrates a high level of attractiveness;
- an involvement in university education through a successful new master;
- a strong involvement and even a leadership in several projects;
- a productive data center supported by a solid software group;
- a recognized know-how in the development of space instrumentation with unique characteristics;
- a well-balanced activity between pure astrophysics and state-of-the-art technology research with the specificity (unique in France) of a science team working on innovative optical instrumentation;
- the mastering of a unique set of technical facilities for qualification in space conditions and manufacturing of innovative optics;
- a strong industrial partnership (e.g. with Thales, Onera);
- a clear success in the various components of the Programme d'Investissement d'Avenir;

- the consolidation of observation services.

From an organizational point of view, the unit benefits from several assets: the cohesion and dynamism of the management team which was able to make decisive choices, the very effective organization of the technical team according to a matrix scheme, a scientific advisory committee which appears to be an appropriate tool for the scientific animation. One has to add that job satisfaction is the dominant attitude from PhD students to technical and scientific staff, including postdocs and short-term contracts.

The five-year plan is logically based on the know-how of the laboratory and is solid at least concerning the exploitation phase of several new instruments, as well as the involvement in the instrumentation of the future European Extremely Large Telescope.