

FINAL SUMMARY OF THE EVALUATION ON THE RESEARCH UNIT:

Laboratoire d'Annecy de Physique des
Particules (LAPP)

UNDER THE SUPERVISION OF THE FOLLOWING INSTITUTIONS AND RESEARCH BODIES:

Centre National de la Recherche Scientifique -
CNRS
Université Savoie Mont Blanc

EVALUATION CAMPAIGN 2019-2020
GROUP A

Rapport publié le 24/03/2020



In the name of Hcéres¹:

Nelly Dupin, acting
President

In the name of the experts committee²:

Juan José Hernandez Rey, 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 experts committees and signed by their chairman." (Article 8, paragraph 5);

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

Tables in this document were filled with data submitted by the supervising body on behalf the unit.

UNIT PRESENTATION

Unit name:	Laboratoire d'Annecy de Physique de Particules
Unit acronym:	LAPP
Current label and N°:	UMR 5814
ID RNSR:	199512089S
Application type:	Renewal
Head of the unit (2019-2020):	Mr Giovanni LAMANNA
Project leader (2021-2025):	Mr Giovanni LAMANNA
Number of teams and/or themes:	7 teams project and 1 disbanded team

EXPERTS COMMITTEE MEMBERS

Chair:	Mr Juan José HERNANDEZ REY, Spanish National Research Council, Spain
Experts:	Mr Christophe BALLAND, Sorbonne Université, Campus Pierre et Marie Curie Mr Stéphan BEURTHEY, IN2P3/CNRS, Université Aix-Marseille, Marseille (supporting personnel) Ms Maria Gabriella CATANESI, National Institute for Nuclear Physics, INFN, Bari, Italy Ms Piera Luisa GHIA, IN2P3/CNRS, Université Paris-Sud (representative of CoNRS) Mr Gérald GRENIER, Université Claude Bernard Lyon 1 (representative of CNU) Ms Chiara MARIOTTI, National Institute for Nuclear Physics, INFN, Turin, Italy

HCÉRES REPRESENTATIVE

Mr Philippe GOUDEAU

REPRESENTATIVES OF SUPERVISING INSTITUTIONS AND BODIES

Mr Roman KOSSAKOWSKI, USMB

Ms Lydia ROOS, CNRS

INTRODUCTION

HISTORY AND GEOGRAPHICAL LOCATION OF THE UNIT

The Annecy Laboratory of Particle Physics (LAPP) was founded in Annecy-le-Vieux in 1976. Initially gathering IN2P3 particle physicists from Paris attracted by the closeness of the location to CERN (European Laboratory for Particle Physics), it then widened its interests, since the 1990s, to astroparticle and neutrino physics, becoming involved in experiments outside CERN. Since 1995 LAPP is a joint research unit of the CNRS / IN2P3 and the University Savoie Mont Blanc (USMB). It is member of the Community grouping Universities and research institutes of Grenoble-Alps region (ComUE UGA) committed in structuring the IDEX1 (for Initiative of Excellence) during its probationary period. LAPP is housed in a 8500 m² structure comprising three buildings located on a surface of about 40000 m².

The LAPP unit coordinates its activities in the local ecosystem at two different levels: (i) The Universities (USMB and UGA) and the research institutes (such as other CNRS units or international institutes such as CERN), (ii) The local authorities (such as the Conseil Régional Auvergne Rhône-Alpes – CR-ARA; the Conseil Départemental de Haute Savoie – CD74; Agglomération Grand Annecy – AGA).

LAPP has joined the scientific pole of the UGA-ComUE, Particles-Astrophysics-Geosciences-Environment (PAGE) as an important player and consolidating the presence and interest of the particle/astroparticle physics community therein. The strongest links between LAPP and UGA, built upon PAGE, have been structured within two national (PIA) funding frameworks Labex and IDEX.

Within the UGA IDEX, LAPP leads since 2012 the ENIGMASS Labex project associating four laboratories, LAPP, LAPTh, LPSC (Grenoble) and LSM (Modane), to consolidate the collaboration in fundamental physics in the Alps, from Geneva to Annecy and Grenoble. LAPP's leading role in this Labex is confirmed for the next five-year contract for which they have successfully passed a national PIA competition and extension of the grant is guaranteed for the period 2020-2025.

MANAGEMENT TEAM

Director: Mr Giovanni LAMANNA

Deputy Director (« Education et École Doctorale ») : Ms Edwige TOURNEFIER

Deputy Director ("Projets techniques"): Ms Nadine NEYROUD GIGLEUX

Directorate Assistant: Ms Caroline MARCHAND

HCÉRES NOMENCLATURE

ST2 – Physique.

THEMATICS

The research is currently organised into the following main themes:

Standard Model and Beyond Physics, centered on the one hand on the participation to hardware, software and analysis activities in the experiments ATLAS and LHCb at the LHC, and on the other on R&D activity towards future colliders;

Neutrino physics, consisting of hardware and analysis contributions to the SuperNEMO and STEREO experiments, located in the Modane Laboratory and in Grenoble, respectively, as well as to the R&D for the DUNE project, ProtoDUNE-DP, at CERN.

Astroparticle Physics and Cosmology, including gravitational-wave astrophysics using ground-based and spaced-based detectors (Virgo and Einstein Telescope); cosmic-ray astrophysics, studying gamma-rays and charged particles using ground-based gamma-ray observatories (HESS and CTA) and particle detectors on board the International Space Station (AMS); measuring fundamental cosmological parameters with the data from the Large Synoptic Survey Telescope (LSST).

UNIT WORKFORCE

Laboratoire d'Annecy de Physique de Particules (LAPP)		
Active staff	Number 06/30/2019	Number 01/01/2021
Full professors and similar positions	5	5
Assistant professors and similar positions	4	4
Full time research directors (Directeurs de recherche) and similar positions	18	17
Full time research associates (Chargés de recherche) and similar positions	17	17
Other scientists ("Conservateurs, cadres scientifiques des EPIC, fondations, industries, etc.")	0	0
High school teachers	0	0
Supporting personnel (ITAs, BIATSSs and others, notably of EPICs)	66	64
Permanent staff	110	107
Non-permanent professors and associate professors, including emeritus	1	NA
Non-permanent full time scientists, including emeritus, post-docs (except PhD students)	18	NA
PhD Students	18	NA
Non-permanent supporting personnel	4	NA
Non-permanent staff	41	NA
Total	151	107

GLOBAL ASSESSMENT OF THE UNIT

The research unit has preserved and increased during the evaluated period its high-level research programme in the fields of experimental particle physics, astroparticle physics and cosmology. The unit has a wide portfolio of experiments and research topics, covering a good fraction of the most pressing questions in today's fundamental physics, such as the origin of mass, the question of flavour, the in-depth study of the Standard Model and the search for new physics, the nature of dark matter and dark energy, the understanding of the violent Universe through gamma rays and gravitational waves, CP violation and the matter-antimatter asymmetry in the Universe, the nature of the neutrino, etc. Moreover, LAPP scientists participate in these experimental activities in a well-balanced and comprehensive way, with contributions to hardware, software and analysis, so that the overall impact of the unit as a whole is known and recognized in each of the experiments in which they participate. The remarkable technical excellence, one of its identity hallmarks, gives them a sound basis to make first-rank contributions to the construction of the experiments in which they participate and ensure a privileged position to take full advantage of the data. The scientific production resulting from this activity is, in terms of scientific articles, outstanding and the number of scientific talks, which give visibility and single out the unit's contributions, is remarkable. Several other indicators, such as awarded grants, project funding, positions of responsibility and prizes, show a high-level profile of the research unit.

The unit's scientific strategy is well aligned with the French, European and international roadmaps, thus granting a very solid ground on which its scientists can unfold their research. At the same time, they have original and distinct contributions within the large collaborations in which they participate (ATLAS, LHCb, Future Accelerators, DUNE, HESS/CTA, LSST/DESC, VIRGO). They have also made contributions to smaller, bolder (and riskier) initiatives, such as SuperNEMO and STEREO.

The close links between LAPP and the universities of Savoie Mont Blanc (USMB) and Grenoble Alps (UGA) furnish a fertile ground to take advantage of the unit's research capabilities to provide high quality training at different levels. The sizeable increase in the number of HDRs in the unit during recent years is very positive. An effort to increase the number of PhD theses supervised must be made trying to overcome the handicap of being away from the main provider of M2 and PhD students in physics, namely UGA.

During recent years their commitment to outreach and public awareness towards science has increased both in quantity and quality. In this sense, their EUTOPIA project ("a space for discovery") has been an excellent initiative. There is a good connection with their parent organisations, IN2P3/CNRS and University of Savoie Mont Blanc and they intend to incorporate the University of Grenoble-Alps as a new tutor at the time of the visit, which could bring about additional benefits to LAPP's operation.

The unit's strategy for the coming five years is well structured and coherent. To start with, they have clear plans to phase out those activities that will come to an end (e.g. SuperNEMO and STEREO), while making the most of their last stages. Their recent disengagement from AMS was smooth and properly executed which, taking into account their important contributions to this experiment, makes the whole experience a case of success. The preparation for the several important transitions that are taking place (HL-LHC, upgrading of ATLAS and LHCb, HESS to CTA transition, DUNE) is well underway and there is an increased involvement of the unit in the corresponding activities.

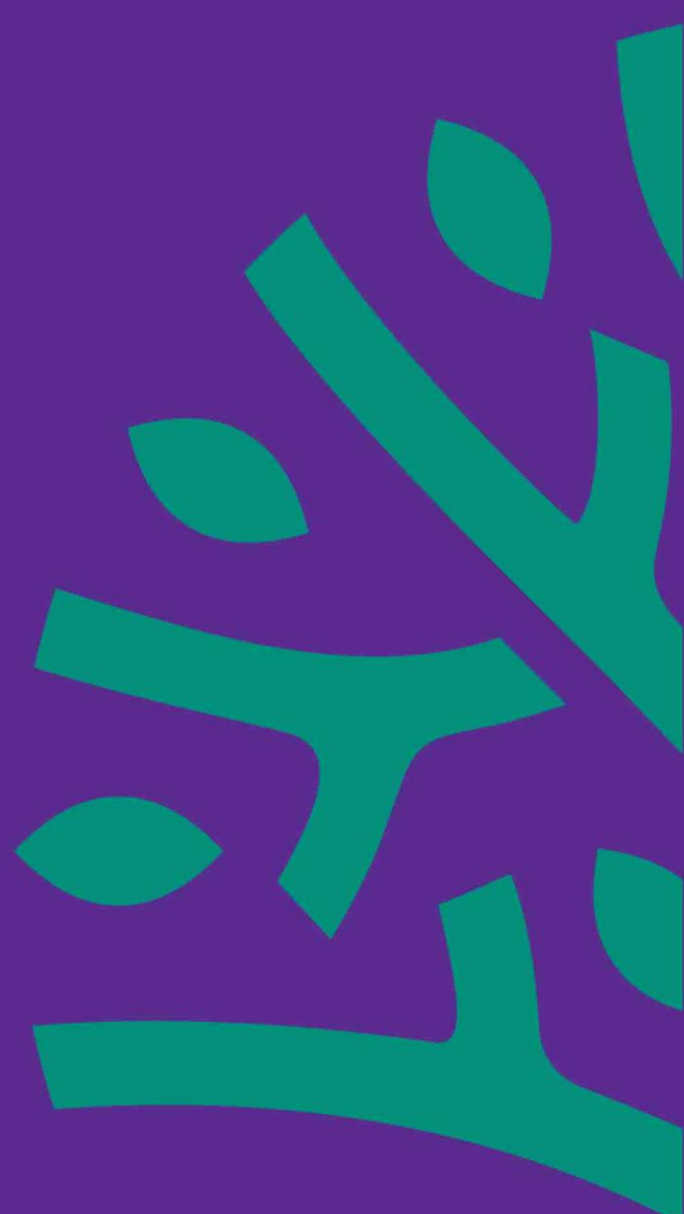
They take advantage of all the previous work, building on the investment done in the past (e.g. the calorimeters at the LHC experiments, the contributions to the LST in CTA, the physics areas where they have expertise, etc.), while being prepared for new, forthcoming opportunities, in particular in the area of future accelerators. In summary, the committee's appraisal is that this is an excellent unit, with a broad and balanced research programme with several outstanding contributions, which significantly contributes to the training of young researchers and which has a well-defined and solid strategy for the future.

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