



ENIGMASS

1. Noteworthy productions

1.1. Outstanding progress regarding research

Enigmass is fully committed to some of the most important large scale experiments for the study of fundamental physics in the sectors of particle and astroparticle physics and astrophysics, and to the related theoretical work. ENIGMASS has contributed in a visible way to the discovery of the Higgs boson at CERN with the study of the two photon decay channel.

1.2 Striking progress in other “Labex” fields

a. Formation

The ESIPAP school in instrumentation for particle and astroparticle physics and the particle and astroparticle physics summer school for undergraduates (GraSPA) are two important initiatives in the field of education. Together with the Master program these initiatives mark important progress toward the creation of an international pole of excellence in the Alps region.

b. Valorization

The development of a high sensitivity seismic sensor to measure nano vibrations has been successfully supported by Enigmass. The project was presented to the evaluation committee of the regional SATT and selected for subsequent development.

c. International (outreach, attraction, networking...)

Several outreach initiatives have been put into operation. ENIGMASS has made a significant effort to join forces together with other LabExes and produce events of national relevance (e.g. "La nuit des deux infinis") for the popularisation of fundamental particle and astro-particle physics.

2. Added-value resulting from labelling and funding as a “Laboratoire d’Excellence”

The most important added value from LabEx labelling and funding is the establishment of strong links between the various Labs of the program, a significant step towards the creation of University of Grenoble Alps, serving the Grenoble and the Savoy-CERN areas.

3. Main weaknesses

3.1. Main weaknesses that might require corrective actions regarding the research performed in the “Labex”

The research program consists in a large number of international initiatives. This, on one side, is a strength, but, on the other side, it could be seen as a weakness, because the LabEx funding is feeding all these initiatives. ENIGMASS management should discuss if the concentration of the funding on a subset of these initiatives could allow a major impact of the ENIGMASS groups. Another concern could be the long term sustainability of the pole that has been created, after the end of LabEx funding. Lack of progress towards the creation of a Particle Physics and Astrophysics Department in the future University of Grenoble Alps may jeopardise the work done by the LabEx.

3.2 Main weaknesses that might require corrective actions regarding other fields of the “Labex”

a. Formation

Better internationalisation of the recruiting mechanism for master students and postdocs is recommended.

b. Valorization

Enlarge the study for applications of accelerator and particle physics technologies.

c. International (outreach, attraction, networking...)

No particular weakness

4. “Labex” contribution to structuring the gathered scientific strengths (governance, synergy, common scientific programming, visibility...)

The link between the different Labs created by the LabEx prefigures a long lasting collaboration in the scientific sectors of the project.

5. Beyond scientific results specifically obtained by the “Labex”, give an assessment on its contribution to the development, outreach and overall visibility of the concerned institutions and of the corresponding site.

The LabEx funding has given a strong contribution to the visibility of the involved institutions and to the development of a coherent effort at the University of Grenoble Alps

6. Overall opinion and recommendations

The aim of the research program of ENIGMASS is the study of fundamental physics in the sectors of particle physics, astroparticle physics and astrophysics, and the related theoretical work. Breakthroughs have already been achieved, through participation in the Higgs boson discovery.

The LabEx has made good progress towards the fulfilment of the goals set at the beginning. The results obtained thus far provide good prospects for producing first class research during the continuation of the program.

The program has also got very good results in the field of training, with the creation of the ESIPAP school in instrumentation for particle and astroparticle physics and the particle and astroparticle physics summer school for undergraduates (GraSPA). Valorisation of research on the nm vibration sensor is a promising initiative and the search for other applications of particle physics and accelerator technologies developed inside the LabEx is recommended.

The most important added value from ENIGMASS is the establishment of strong links between the various Labs of the program, which has brought to the formation of an internationally recognised body that could be the basic unit for the physics department of a future University of Grenoble Alps. In this perspective, ENIGMASS has been a strong success. The management could make an evaluation of a possible better distribution of the resources. Also discussion among the partners about future sustainability should start soon.