European Strategy Update

Particle Physics in Greece

Greece was one of the twelve founding Member States of CERN in 1954. Ever since, Greek experimentalists have been involved in the entire spectrum of research activities at CERN, from detector development and computing to numerous experiments at CERN's PS, SPS, ISR, SppS & LEP facilities even to the accelerator integration (LHC) or to the accelerator design and construction (CLIC). Greek researchers, both from Greece and abroad, have made notable contributions to the field of experimental and theoretical particle physics.

Today, particle physics research is carried out in nine universities and research institutions in Greece. The exploitation of the LHC is currently the main objective of Greek researchers who have made a strong commitment to the LHC and in particular to its two main experiments, ATLAS and CMS. These two experiments have absorbed the majority of the research effort in Greece since the beginning of 1990s. Greek institutes have participated in the design, construction and commissioning of the barrel muon systems of ATLAS, and of the preshower detector and data acquisition system of CMS. In addition, Greek scientists participate in the ALICE and CAST experiments, in the GRID project, CLIC developments project, and in the R&D of Micromegas detector for the sLHC. A novel activity for the Greek scientific community was the successful participation of a team of 12 engineers in the LHC cryogenics integration during the years 2006-2008.

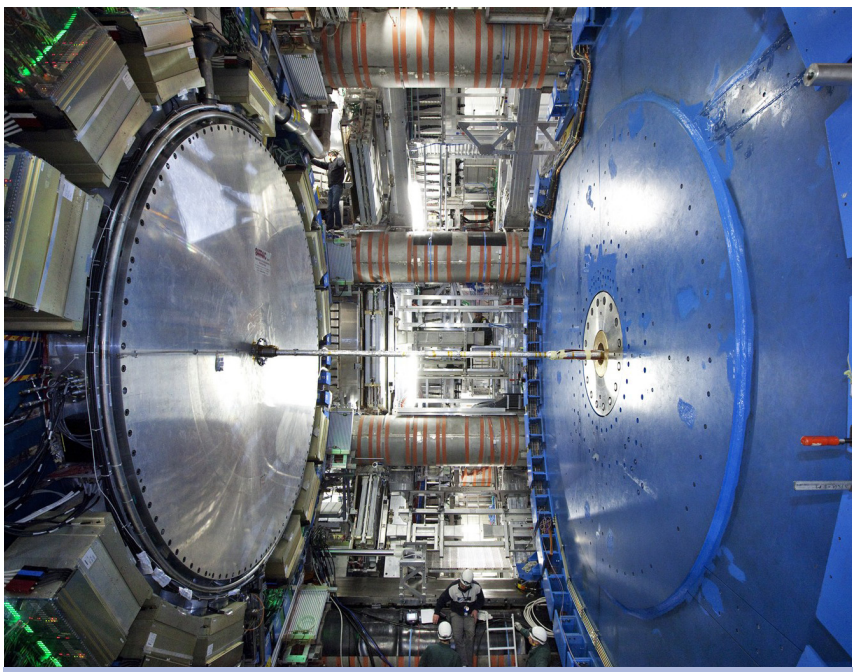
Participation in CERN experiments

ALICE, ATLAS, CMS, ACE, CAST, DIRAC, NA61, nTOF

Special participation in CERN accelerator projects

CLIC/CTF3

WLCG participation



ATLAS

Medical and Life Sciences

There is great effort in research and applications in the medical and life sciences at most Greek universities (UoAthens, NTUA, AUTH, UoPatras, UoCrete, Uoloannina, DUTH, UoAegean), involving physics/engineering departments and medical/biology/pharmacy/chemistry departments working in cooperation with many institutes from research organizations (NCSR "Demokritos", National Research Foundation, etc.) plus many large public hospitals.

During the last five years, the Greek particle physics community participating in experiments at CERN has started a cooperation with the medical staff of the university medical departments, the engineering departments and the regional governments of Region of Thessaly, Region of East Macedonia & Thrace and Region of Crete for the development of a center for proton therapy and radio-isotope production. The central Greek government will support the realisation of such a facility with development, regional and structural funds from the European Commission.

Many young Greek doctoral students are participating in a variety of CERN projects, such as the LHC experiments and its upgrades, CLIC, neutrinos, as well as European Commission-funded projects, such as AIDA, TIARA, EDUSAFE and ARDENT. Some of these students are obtaining the necessary education and expertise to support the installation and operation of the proton therapy and radioisotope production facility in Greece.

Energy and the Environment

The engineering and physics departments in most Greek universities have large efforts in alternative renewable energy sources (solar, wind, geothermal, etc.) in addition to hydroelectric energy, which is the main electrical power source for the country. Greece has taken the strategic decision to not build nuclear power plants.

The Greek research laboratories, Laboratory for the Environment of GAEC, Environmental Radioactivity Laboratory of the NCSR "Demokritos" and the Laboratory of Nuclear Technology of the NTUA are monitoring continuously the country's environment (seas, lakes, rivers, air and ground) for possible radiation pollution coming from incidents originating in neighbouring countries.

Communication and New Technologies

The Greek media - daily newspapers, magazines and science outreach journals - very frequently refer to the announcements of the groundbreaking developments at CERN, providing continuous information to the public. Many journalists are in regular contact with members of the Greek particle physics community, obtaining interviews, article stories and opinions for the science and technology carried-out at CERN.

The Region of East Macedonia & Thrace has sponsored the building of a GRID Tier-2 cluster for the Technological Educational Institute of Kavala (North Greece), which is being realised during the current year and is becoming an additional node of the Hellas-Grid network.

Society and Skills

The Greek particle physics community has shown enthusiastic interest in the outreach activities in Greece, which are supported via many and various events such as expositions, talks, presentations and supporting visits to CERN. Every year, the "Masterclasses" event has been the object of a great number of applications from high school students. More than six (6) academic sites in Greece are offering "Masterclasses" to the students.

In addition, there is a training programme for High School Teachers, where 80 physics teachers from Greek public high schools and 10 physics teacher from Cypriot public schools are coming to CERN for one week to follow courses, perform laboratory demonstrations / experiments and take part in visits in the Greek language.

This year, a team of 10 technicians, graduates of the Sivitanidios Vocational School, have started working on the supercontacting magnet splices for the LHC consolidation project and supervised by staff engineers from the NTUA. They will be working for 18 months.