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PARTICIPATING INSTITUTIONS

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)
 Instituto de Física Corpuscular (IFIC), joint institute of CSIC and University of Valencia
 Centro Nacional de Aceleradores (CNA), CSIC-Universidad de Sevilla-Junta de Andalucía
 Instituto de Ciencias del Espacio (ICE) de Barcelona, CSIC
 Instituto de Estructura de la Materia (IEM) de Madrid, CSIC
 Instituto de Física de Altas Energías (IFAE), Consorcio Generalitat de Catalunya-Universidad Autónoma de Barcelona
 Instituto de Física de Cantabria (IFCA), CSIC-Universidad de Cantabria
 Instituto de Física Teórica (IFT), CSIC-Universidad Autónoma de Madrid
 Instituto Gallego de Física de Altas Energías (IGFAE) de la Universidad de Santiago de Compostela
 Instituto de Física Fundamental (IFF), CSIC
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National Center
 for Particle Physics,
 Astroparticle
 and Nuclear Physics

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CONSOLIDATE PROJECT

CPAN

PARTICLE PHYSICS

It investigates the smallest elementary constituents of matter and their fundamental interactions. To do that, it is necessary to recreate very large energy conditions at giant particle accelerators such as the Large Hadron Collider (LHC).

ASTROPARTICLE PHYSICS

This is a research field at the boundary between Particle Physics, Astronomy and Cosmology that uses new detection methods to observe a wide range of cosmic particles. It aims at understanding the composition and evolution of the Universe.

NUCLEAR PHYSICS

It studies the nature of atomic nuclei, which contain almost all the mass of matter, and the nuclear reactions like the ones that make stars shine. It has applications in energy and medicine.

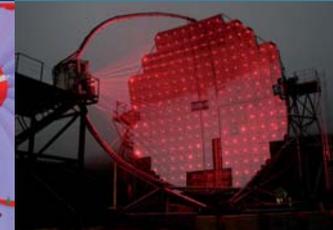
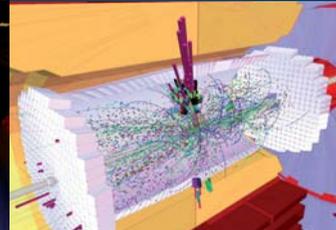
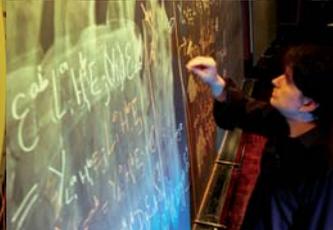
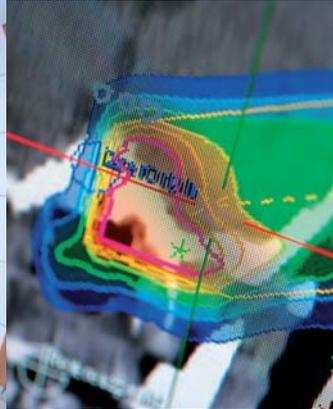
NATIONAL CENTER FOR PARTICLE PHYSICS, ASTROPARTICLE AND NUCLEAR PHYSICS (CPAN)



What is CPAN?

A project involving 26 Spanish research groups in particle physics, astroparticle and nuclear physics. It is funded by CONSOLIDER - Ingenio 2010, a programme of the Spanish Ministry of Science designed to achieve excellence in research by increasing cooperation among scientists.

THESE THREE DISCIPLINES HAVE MULTIPLE APPLICATIONS
AND CREATE NEW TECHNOLOGICAL DEVELOPMENTS



LHC

The largest and most powerful particle accelerator in the world, located in the French-Swiss border. Its main objective is the search for the "Higgs boson", a new particle supposedly responsible for the generation of the masses of the other particles. The vast energy achieved will reconstruct the conditions of the early universe.

MAGIC

Two telescopes to detect and analyze gamma-rays of high energy, the light particles produced at "violent" events of the universe such as supernova explosions and supermassive black holes. It is located in La Palma Island.

FAIR

An accelerator facility, under construction in Germany, to produce matter and antimatter at extreme energy and intensity conditions. Critical nuclei in the formation of the atoms that make up ordinary matter will be studied for the first time, and applications related with energy, medicine and new materials will be developed.



OBJECTIVES

The main objective of CPAN is the creation of a permanent new institution, the National Center for Particle Physics, Astroparticle and Nuclear Physics, which will consolidate the following actions:

- _To promote the coordinated participation of Spanish groups in large international research projects.
- _To represent the Spanish scientific community at national and international levels.
- _To facilitate the integration of human resources (staff, postdoctoral and young researchers).
- _To optimize the available research resources.
- _To develop joint R&D activities.
- _To enhance technology transfer.
- _To organize training and outreach activities.