

Public research organization under the Spanish Ministry of Science, and Innovation through the Secretariat General for Research



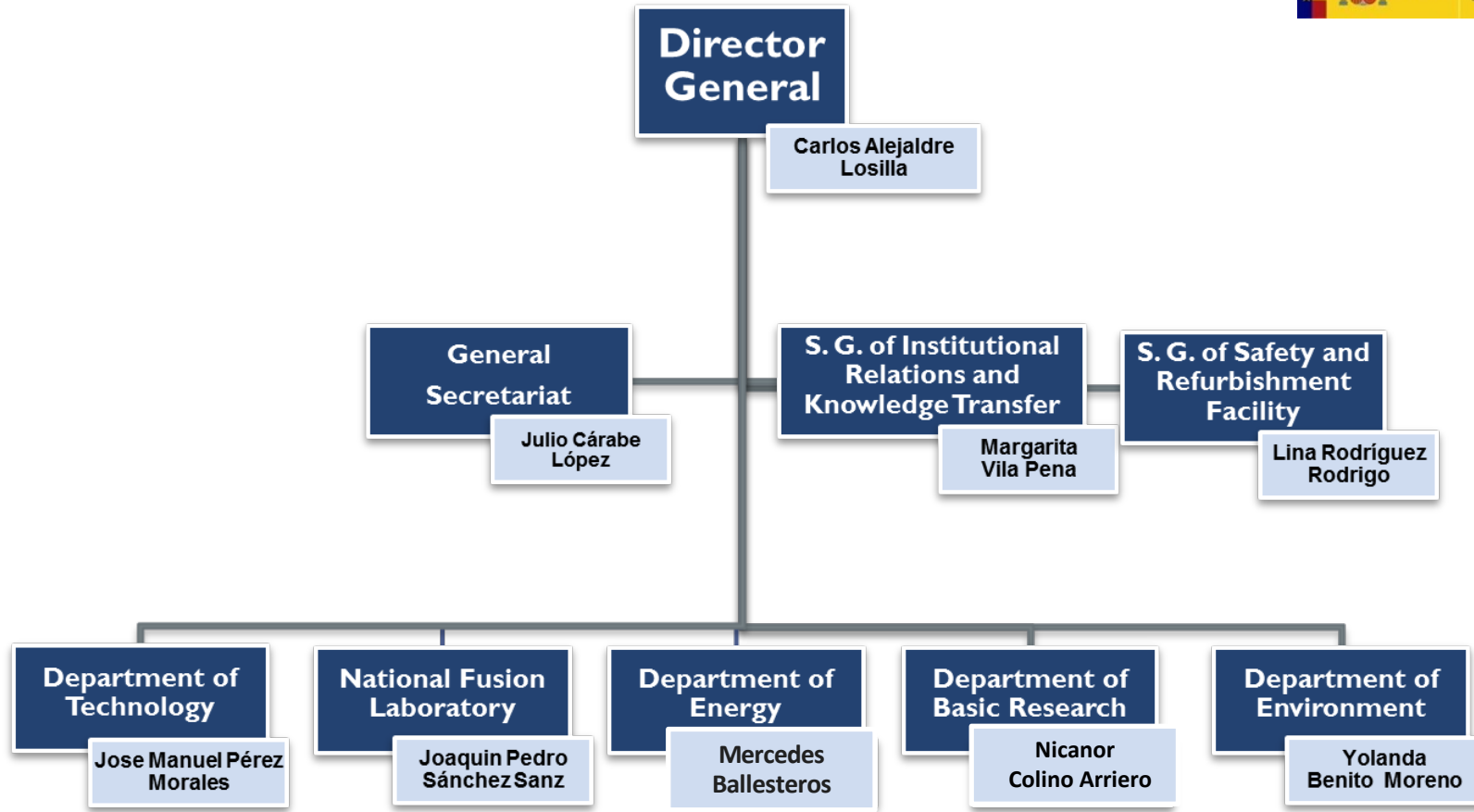
GOVERNMENT OF SPAIN

Ministry of Science and Innovation

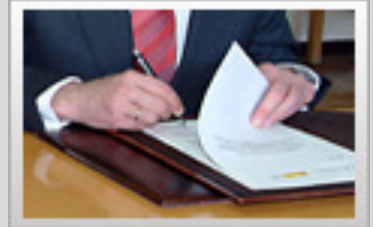
Secretariat General for Research

CIEMAT

Organization Chart



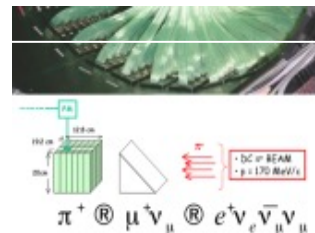
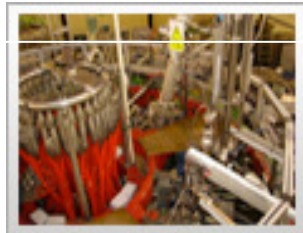
Institutional Relations



General Secretariat



Safety and Facility Refurbishment



Technology

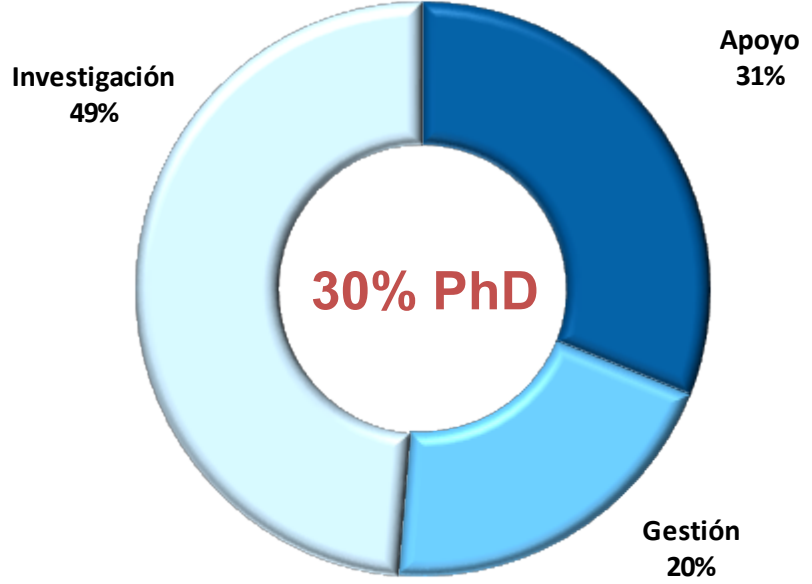
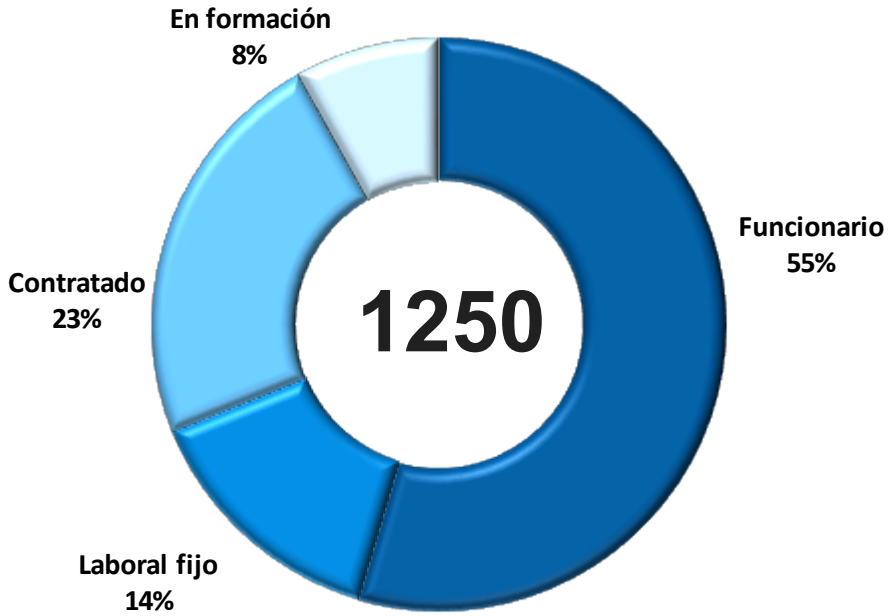
Fusion

Energy

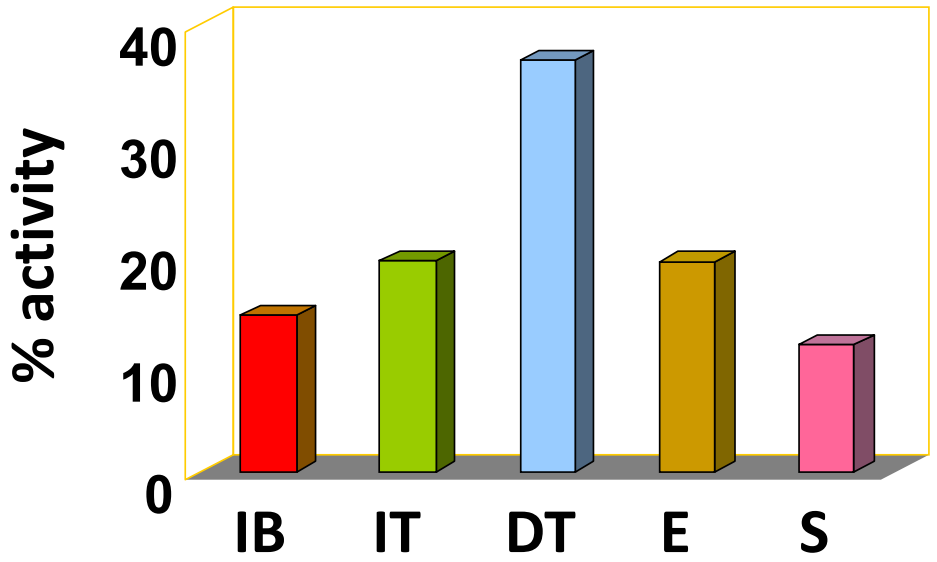
Basic Research

Environment

CIEMAT figures. Human resources

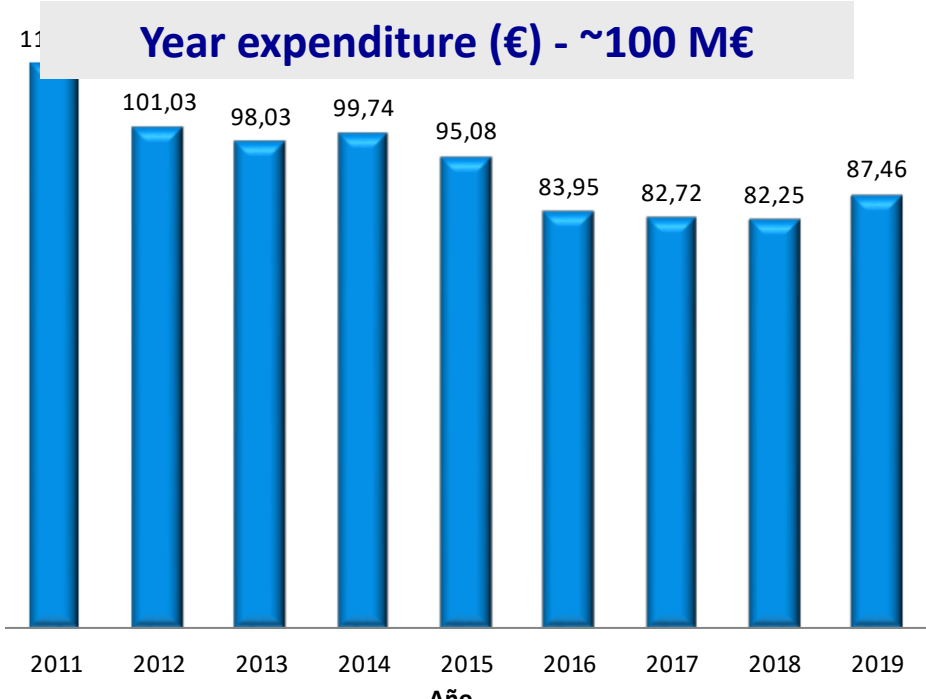


- IB** Basic Research
- IT** Technology Research
- DT** Technology Development
- E** Pilot and Demonstration
- S** Services

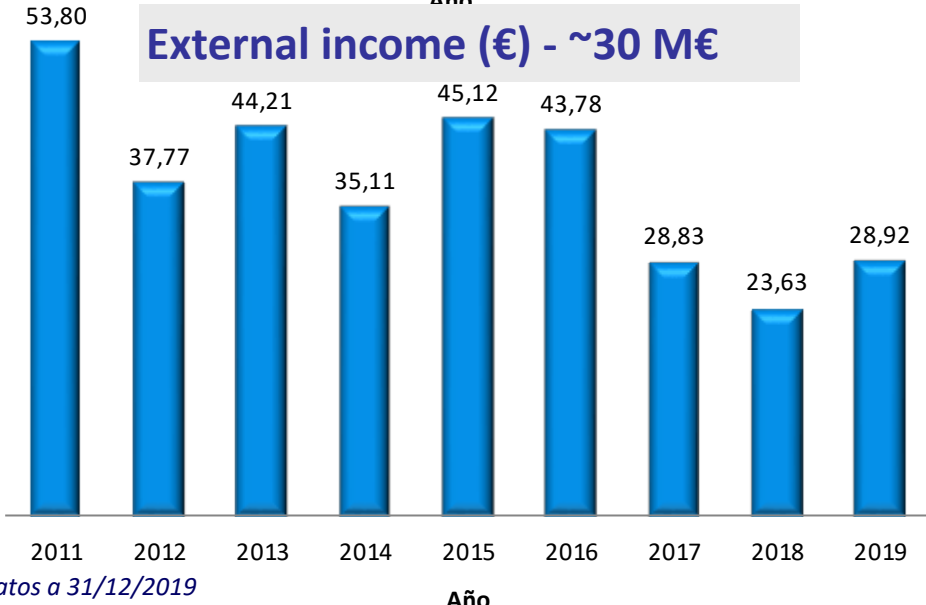
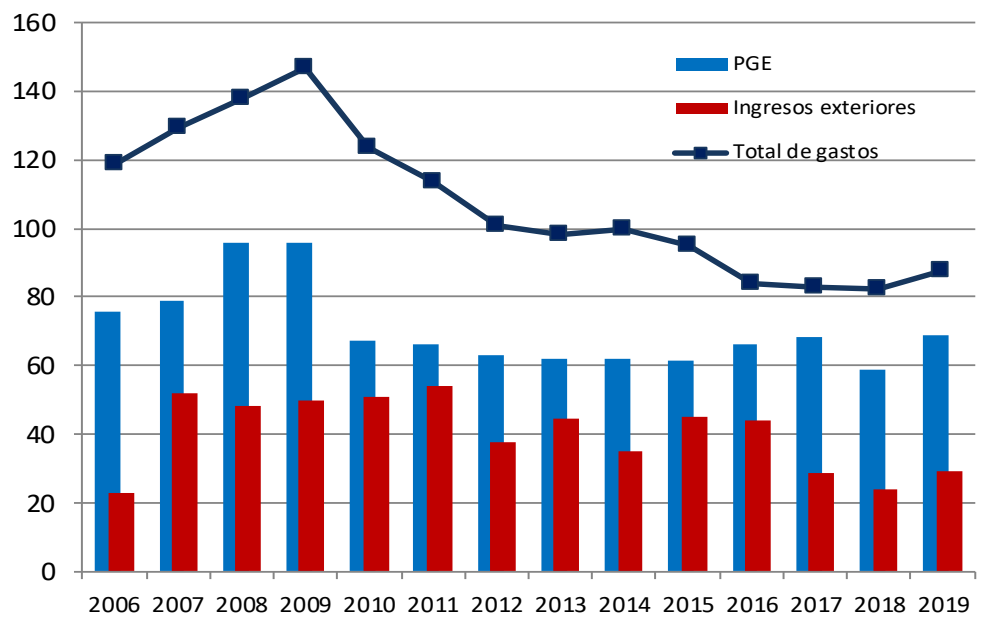


Datos a 31/12/2019

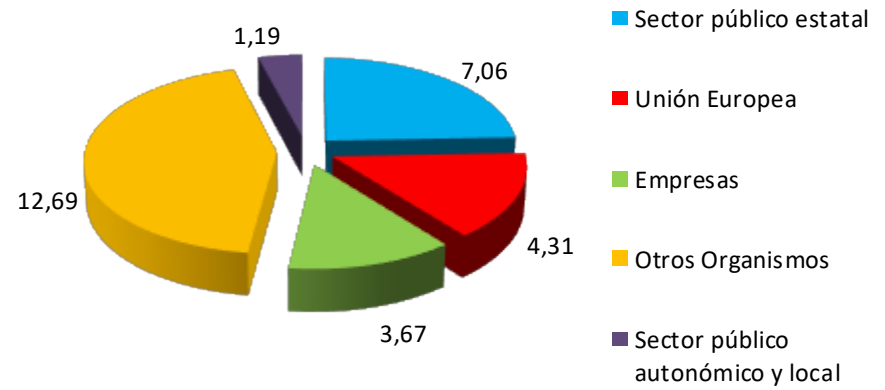
CIEMAT figures. Income



Income from the Government vs external (M€)



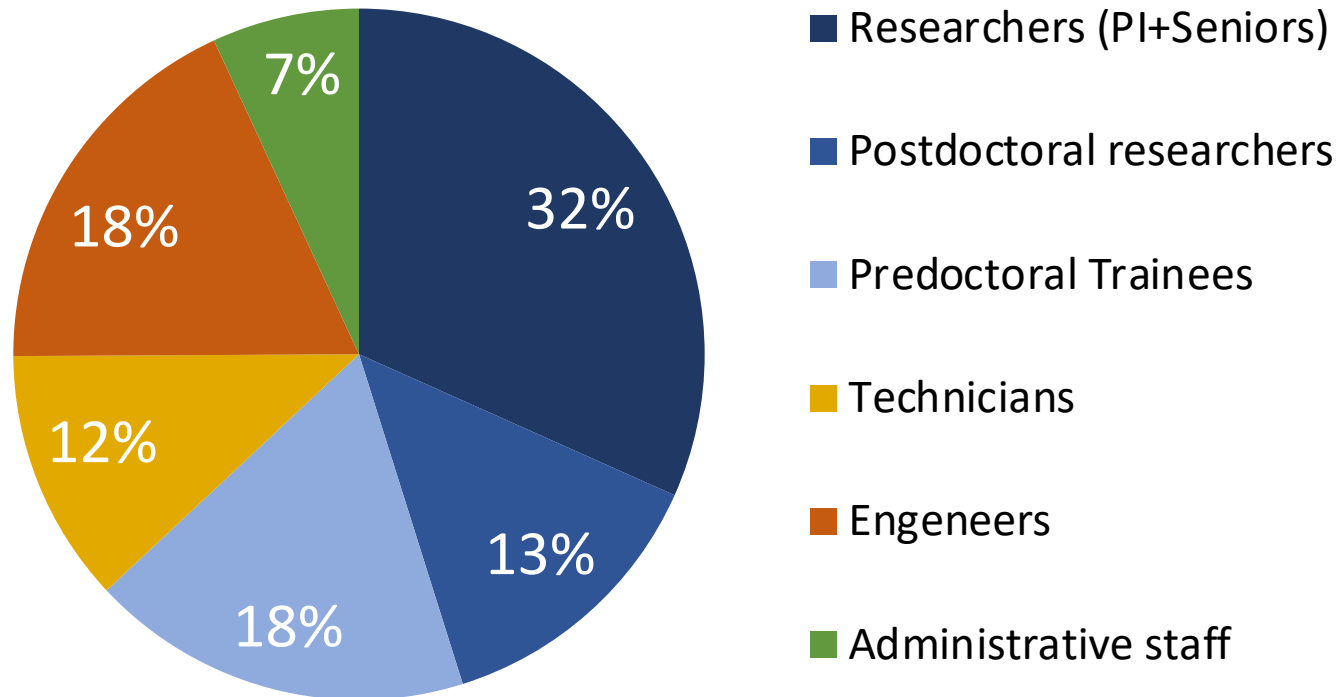
External income from origin 2019 (M€)



Datos a 31/12/2019

Particle Physics Personnel

Currently we are **93** people (**24% Female**) (**50% PhD**)



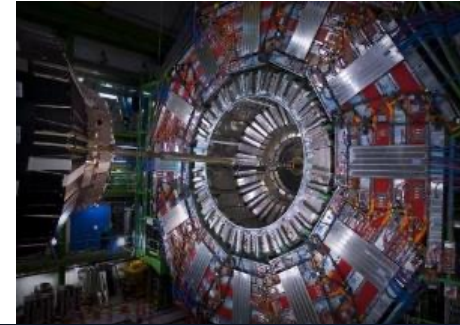
High Energy Physics & Astroparticles

- CMS Experiment at the LHC (CERN)
- Neutrino (DUNE, Double Chooz y WA105)
- Dark matter direct search (DarkSide, ArDM)

- AMS Experiment at the ISS
- CTA and MAGIC at Roque de los Muchachos
- Cosmology, Dark Energy: (DES,PAU)

- Detector R&D
- Scientific Computing – PIC

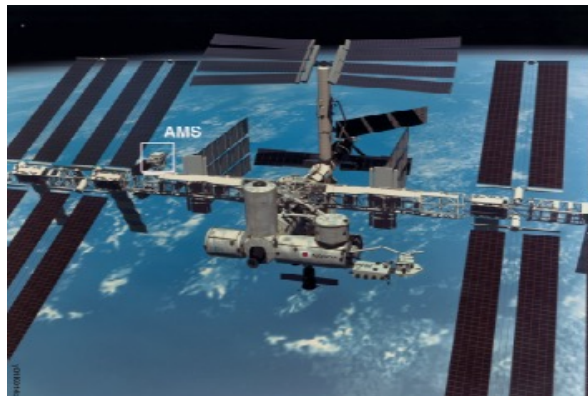
CMS



CTA Project: Very High Energy Gammas
The LST-1



AMS



Proto-DUNE



PIC

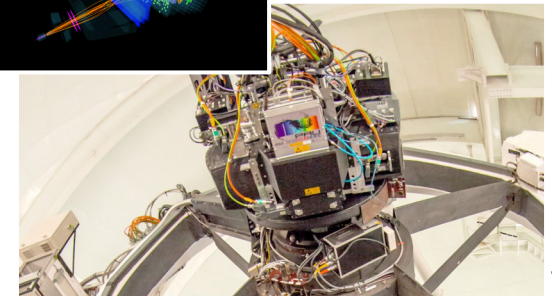
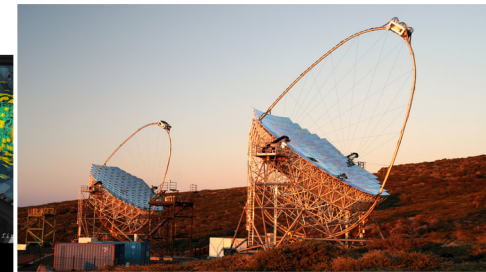
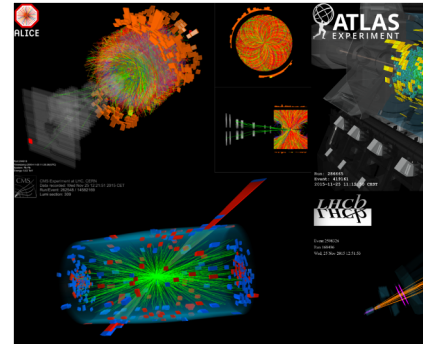


PIC data center

Collaboration agreement CIEMAT-IFAE. Founded in 2003. Located in UAB (Barcelona).

Mission: Participate at highest level in LHC Computing (Tier-1) and leverage experience to support other scientific activities.

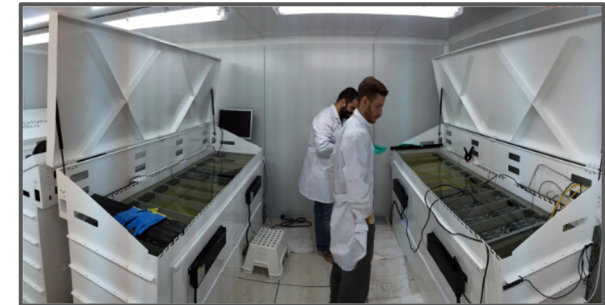
- LHC: Tier1 for ATLAS, CMS, LHCb; Tier2 and Tier3 for ATLAS
- Tier0 for MAGIC and PAU. SDC for Euclid. Data center for the future CTAO.
- Support for DES, T2K, VIP (medical imaging), co2Flux (environmental science)



PIC data center

Data processing services

- 10.000 CPU slots (HTCondor cluster)
- 10 PB disk (dCache) + 25 PB tape (Enstore)
- Bigdata platform (Hadoop/HIVE/Spark)
 - Cosmology analysis web portal & data processing cluster

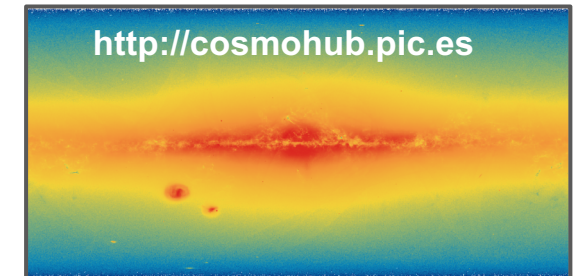


2x100 Gbps connection to Research Networking

- Largest data mover in Spanish academic network

Compact installation. Refurbished in 2014-2016 to achieve high energy efficiency

- Innovative open bath liquid cooling



VIRGO/LIGO opportunistic access to PIC

In place since Jul 2019

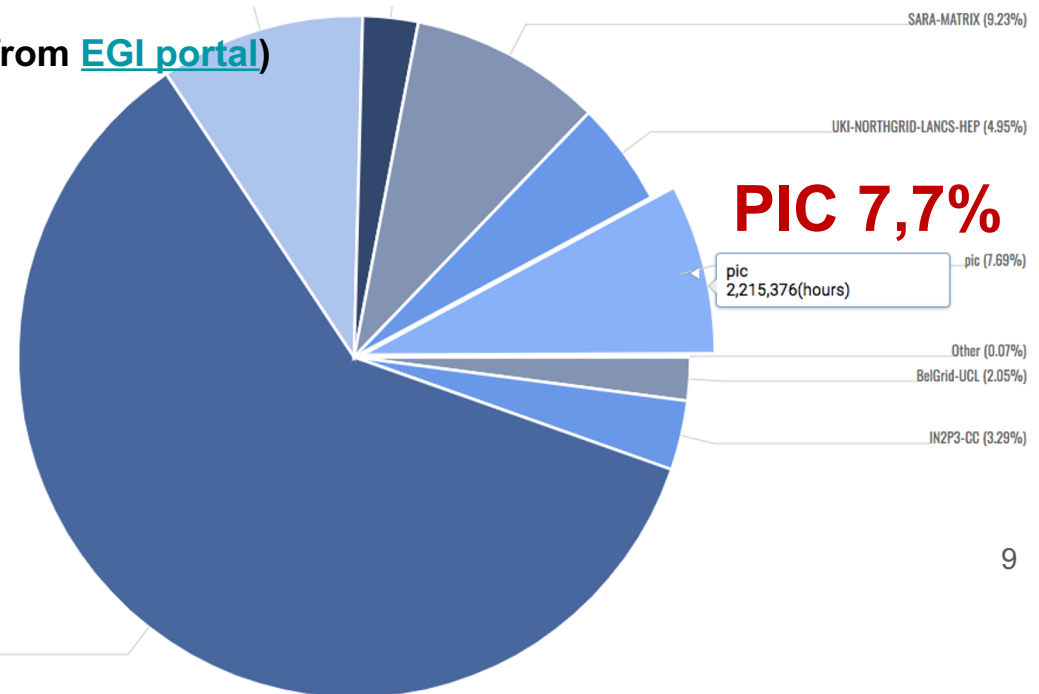
- VIRGO CPU 2020: 2.2 Mhrs at PIC, 3rd top EU country after IT and NL (~8% contribution)
- VIRGO GPU 2020: 8 khr at PIC, top (only) EU contributor (~4% contribution)

GPU hours (from [OSG portal](#))



	total
LIGO-CIT-CE	90 K
Crane	70 K
LIGO-WA-CE	46 K
SDSC-PRP	13 K
LIGO_US_LSU_QB2	13 K
pic	8 K
ND - CAML_GPU	469
ND - CMS_GPU	81

CPU hours (from [EGI portal](#))



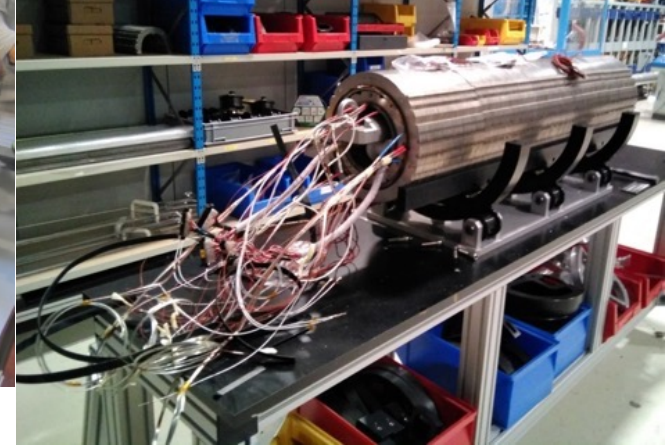
INFN-T1 (60.23%)

Technology Dep. Support

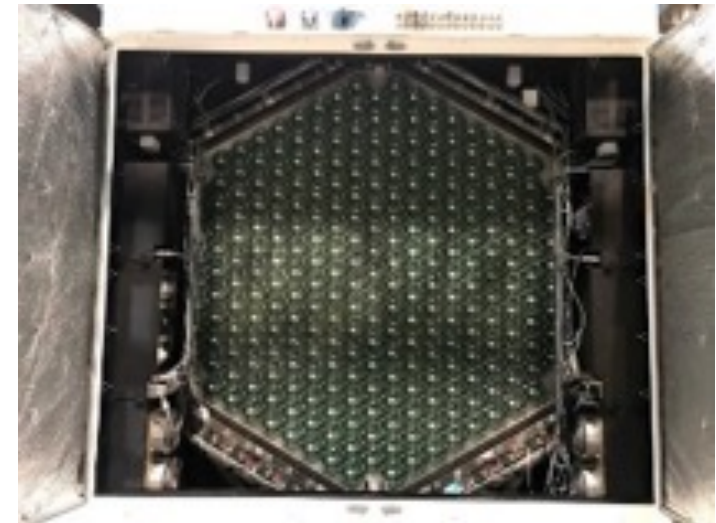
CLIC



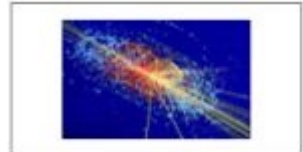
Superconducting magnets HL-LHC & FCC



Electronic instrumentation



CIEMAT. Presencia Internacional



INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION



The CIEMAT Particle Physics Unit wants to collaborate in the Einstein Telescope challenge

- **Nowadays we have not expertise in GW detection but with a growing interest among our researchers**
- **GW have large synergies with our current research areas: Multi-messenger, Cosmology, DM, DE**
- **We want to open a new activity line on GW and look forward to join a GW collaboration in a short/medium term**
- **As we did in previous large collaborations, we want to participate in the ET design and construction**