



**IN2P3**

Institut national de **physique nucléaire**  
et de **physique des particules**

C. de La Taille  
D.A.T. IN2P3

**Elba round table**



# IN2P3, an institute in CNRS

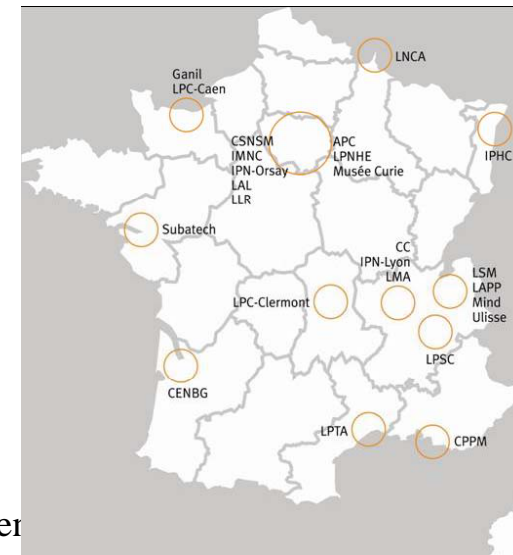
- **CNRS :**

- Under the authority of the ministry for higher education and research
- 11 500 researchers, 14 200 ITA
- 3 G€ annual budget
- 1 200 laboratories
- 10 thematic institutes, including 2 national institutes : IN2P3 and INSU

- **IN2P3 :**

- 2 400 CNRS staff, researchers, engineers and technicians; 600 university and other staff
- Running budget from CNRS : 40 M€
- 24 laboratories and platforms 40 large international projects

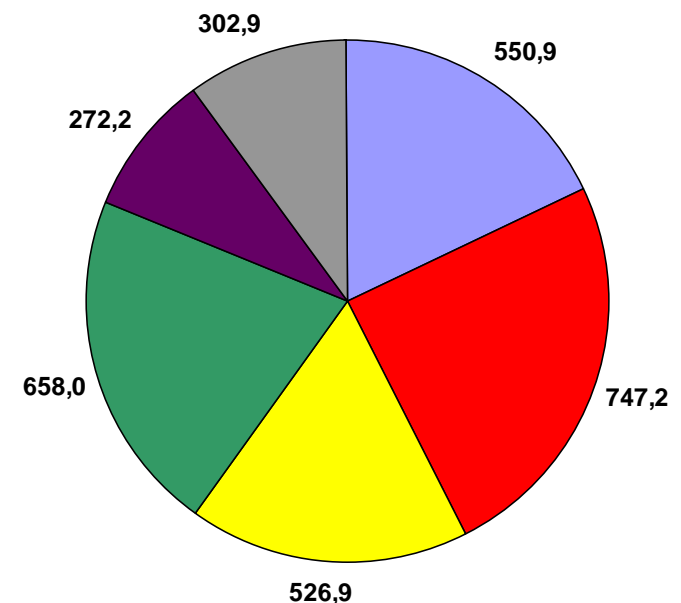
- **Similar (but independent) organization for CEA and CEA/IRFU**



# IN2P3 missions

- **Promote and federate research in nuclear physics, particle physics, astroparticle physics**
- **Coordinate the programs in the name of CNRS and Universities, in partnership with CEA**
- **Explore**
  - Particle physics
  - Nuclear and Hadronic physics
  - Astroparticules and Neutrinos
  - Nuclear energy and waste management
  - Research and Development of Accelerators
  - **Instrumentation (new)**
  - Computing grids
- **Bring its competence**
  - to other scientific domains
  - to contribute solving societal problems
- **Participate to the formation of students (University, grandes écoles)**
- **Help the companies benefit from its expertise**

Répartition des 3058,2 ETP de l'IN2P3  
(source : ISIS 2009)





# IN2P3/IRFU strategy

- **Prospective 2012-2020 being performed this year**
  - Reports from 20 working groups : bottom-up approach
  - Community meeting last april (400 participants)
  - Conclusions by the end of the year
  - Material for European Strategy, NuPEC, APEC...
- **Funding of large projects pluriannual at national level (TGIR)**
  - LHC upgrades, computing centre, GANIL, XFEL, VIRGO, HESS, CTA...
  - In the framework of international commitments
  - Prioritization of IN2P3/IRFU projects
  - Competition with other fields (photon, neutron science...)
  - Collaboration with other fields (interdisciplinarity)
  - Explaining benefits to society...
- **Importance of instrumentation and detector R&D**
  - Better detectors => better physics
  - Numerous examples at this conference (pixels, SiPMs...)

# Instrumentation R&D at IN2P3

- **R&D instrumentation**

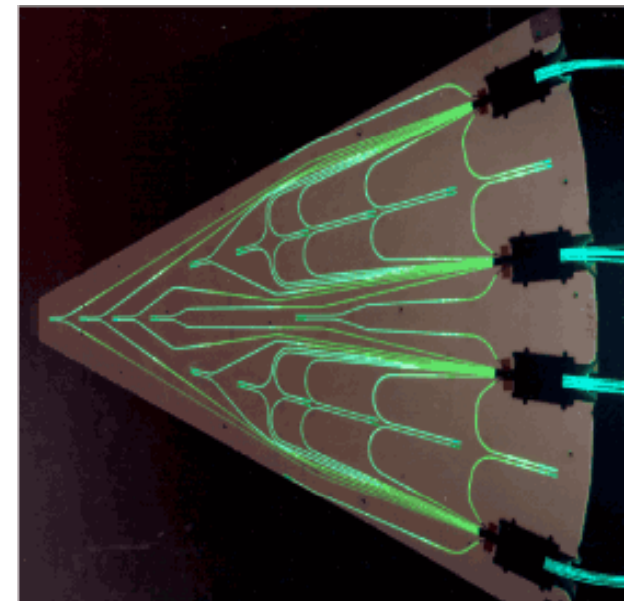
- Photodetectors (PM, SiPM, MCCP, TOF...)
- Gaseous detectors (RPCs, Micromegas, TPCs...)
- Semiconductor detectors (Ge, Si, MAPS...)
- Bolometers (CMB, Edelweiss, 2Beta...)
- Calorimeters (imaging...)
- Radiodetection (MHz, GHz...)
- Microelectronics (ASICs)
- DAQ (NARVAL, FASTER, xTCA, ...)
- R&D mechanics (cooling, composites...)

- **R&D organization**

- Transversal thematic networks
- Target next generation experiments
- Centralized funding

- **Technology platforms**

- Example : microelectronics poles





# Structuration of detector R&D

- **Build some expert groups/labs**
  - Matrix [LAB x detector] size 20x10 !
  - Team around leading expert
  - Avoid/minimize duplication, reinventing the wheel/charge preamp
- **Develop common tools for design and collaboration**
  - Mechanics (Catia, ANSYS), electronics (Cadence)...
  - Networking, thematic schools
- **Control the funding for R&D**
  - Several new funding entities in France (ANR, labex...)
  - IN2P3 main source for manpower and funding
- **Aim at next generation of experiments**
  - Not too generic an R&D
  - No underground project subsidizing

# Backup





# Laboratories structured in a network

- **sharing and optimisation of the ressources and competences of the Institute**
  - large laboratories, infrastructures or technological platforms in limited number
- **Organization by projects**
  - Large International collaborations (LHC, GANIL, FAIR, HESS....)
  - Custom detectors
  - Dedicated readout electronics/mechanics
    - High number of channels
    - Low power
    - Low material
    - High speed
    - High accuracy
    - Radiation tolerance
    - ...
  - pushing the state of the Art

