



Laboratoire d'Annecy-le-Vieux  
de Physique des Particules



# Welcome at LAPP

**Nadine Neyroud** (*Technical director*)

**May 19th, 2014**

**HEPIX**



**In2p3**

# LAPP history

1976



**1976:** Lapp was founded by physicists from Paris and Orsay wishing to live closer to **CERN**.

*Most experiments at CERN (one at the Bugey Nuclear power)*

1984



1992



**2014:**

- Still many experiments at **CERN** (LHC)
- New field of astroparticles: gravitational waves, high energy cosmic rays, search for anti-matter

*Many experiments or R&D in far away places: Italy (OPERA, VIRGO), Namibia (HESS), Japan (ATF2), international space station (AMS).*

# LAPP in a nutshell

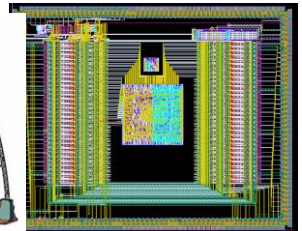
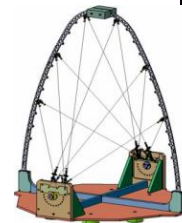
- 58 physicists (including 12 PHD students and 7 post-docs)

*In several large international collaborations working on accelerators (ATLAS and LHCb on the LHC at CERN, OPERA in Gran Sasso), astroparticle experiments (Virgo, AMS, HESS, CTA) and R&D: LC detectors (Micromegas chambers), magnet stabilization for future accelerators, (LAVISTA/ATF2), instrumentation for accelerators (CLIC), ...*

- 72 engineers, technicians and administrative staff

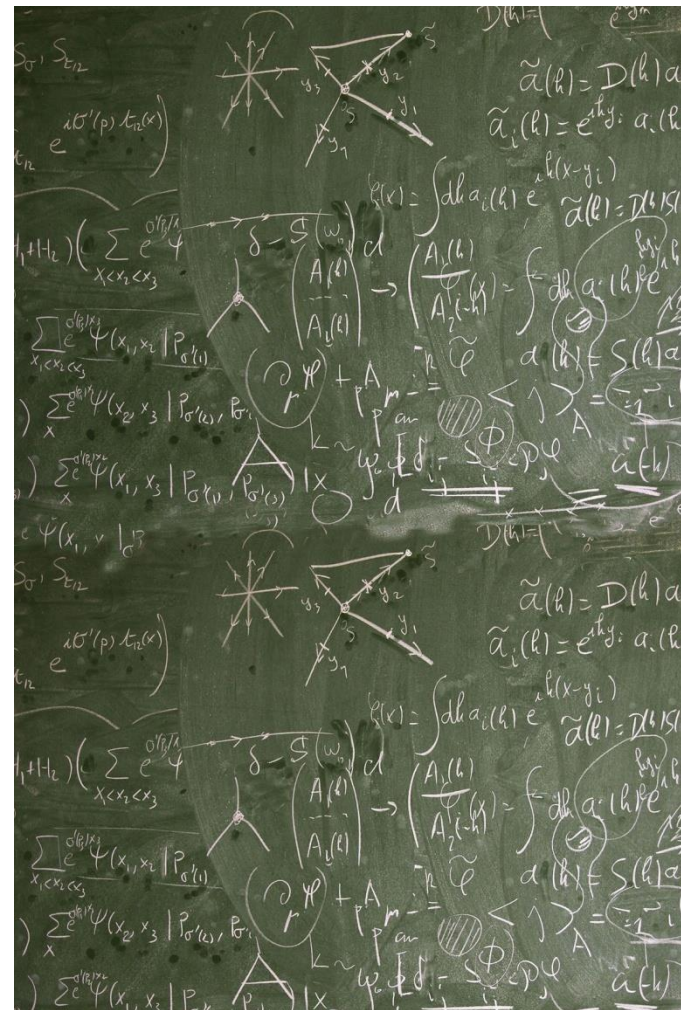
*In three technical services: mechanics, electronics and computing  
Specific skills in automatics, microelectronics, slow control, data acquisition and Grid computing.*

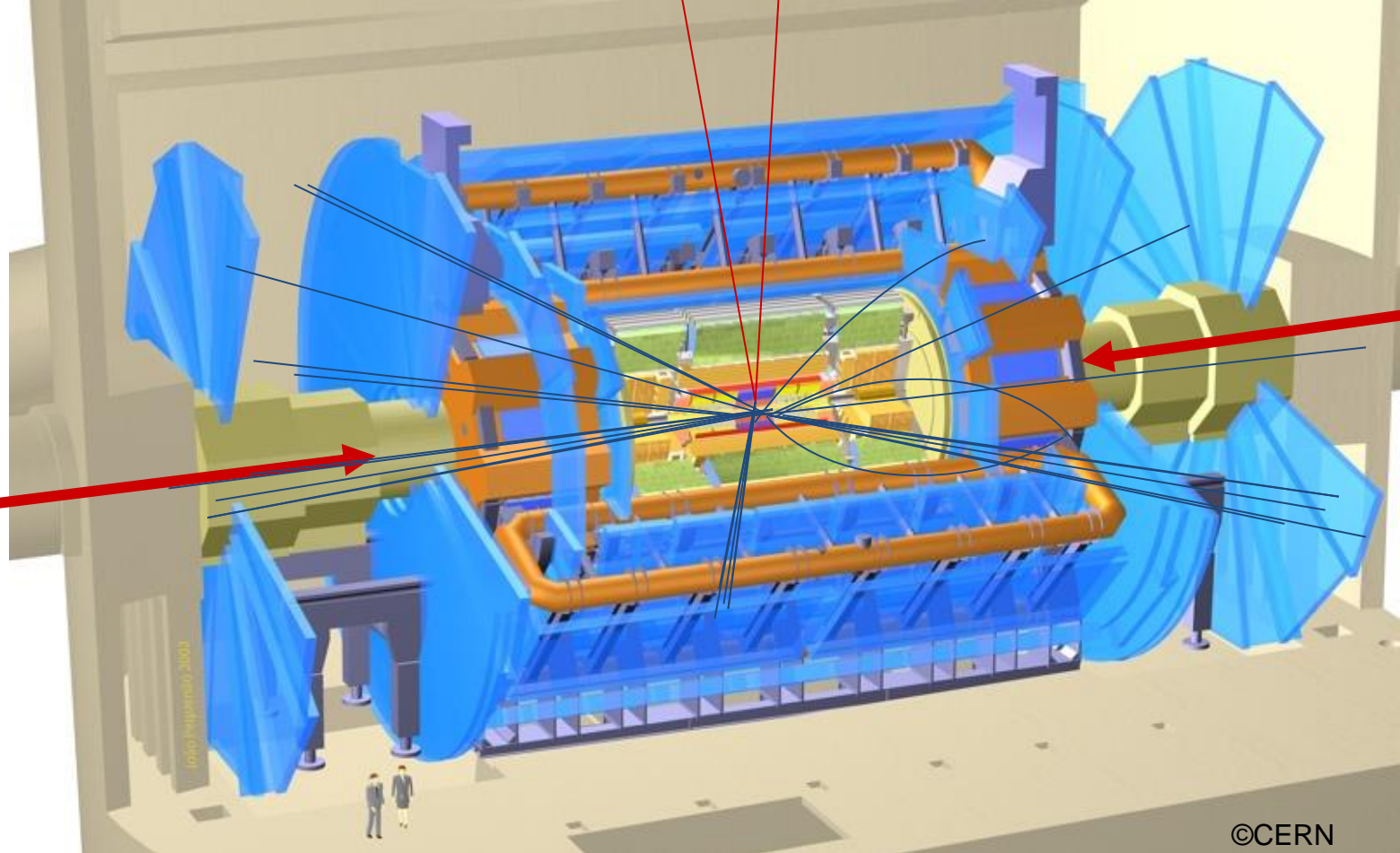
*T2/T3 LCG node and computing platform for Université de Savoie  
research labs (MUST)*





- LAPP also hosts a large [ $\sim 33$  researchers] theoretical physics group, **LAPTh**
- Together, the two labs have created **CIPHEA**, which invites every year foreign experimentalists and theorists working in the field of LHC physics, dark matter, etc.. ( **$\sim 10$  visitors / Yr**)





## ***ATLAS detector at CERN***

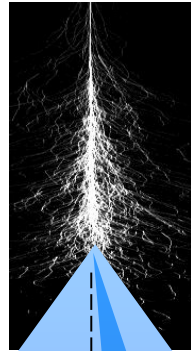
- ⇒ Data acquisition for the Liquid Argon Calorimeter
- ⇒ Pixel detector simulation (GEANT4)



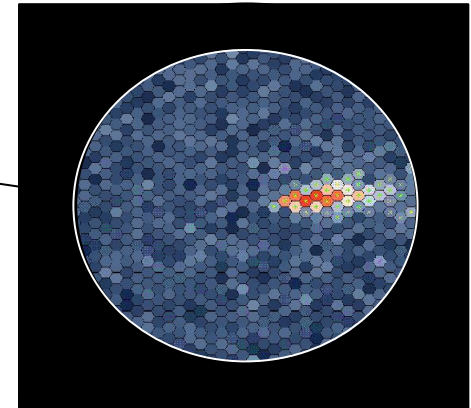
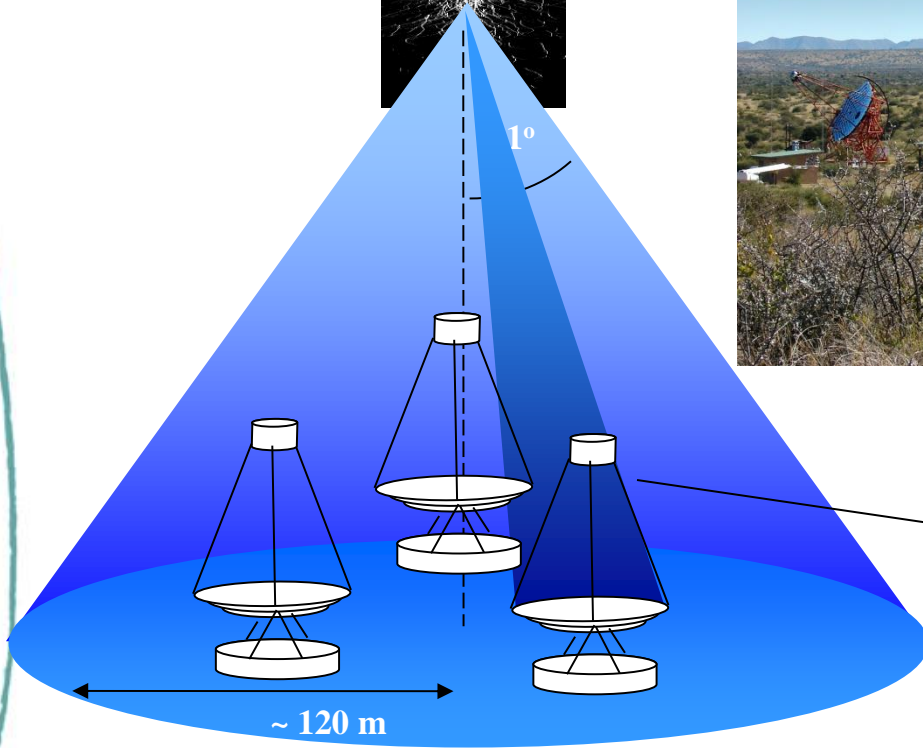
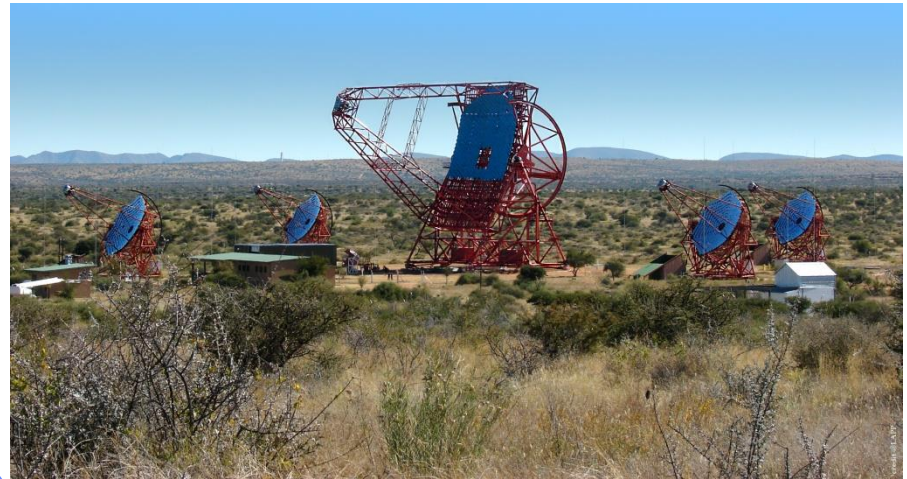
# H.E.S.S. Astroparticule



**Cherenkov  
shower**

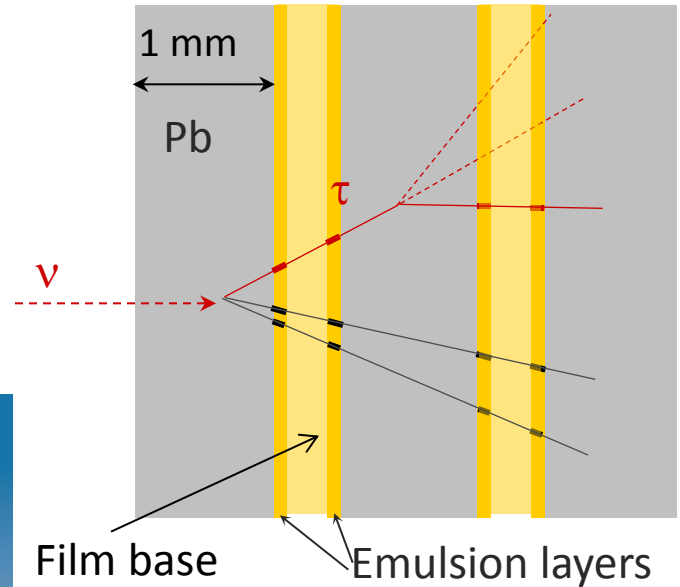
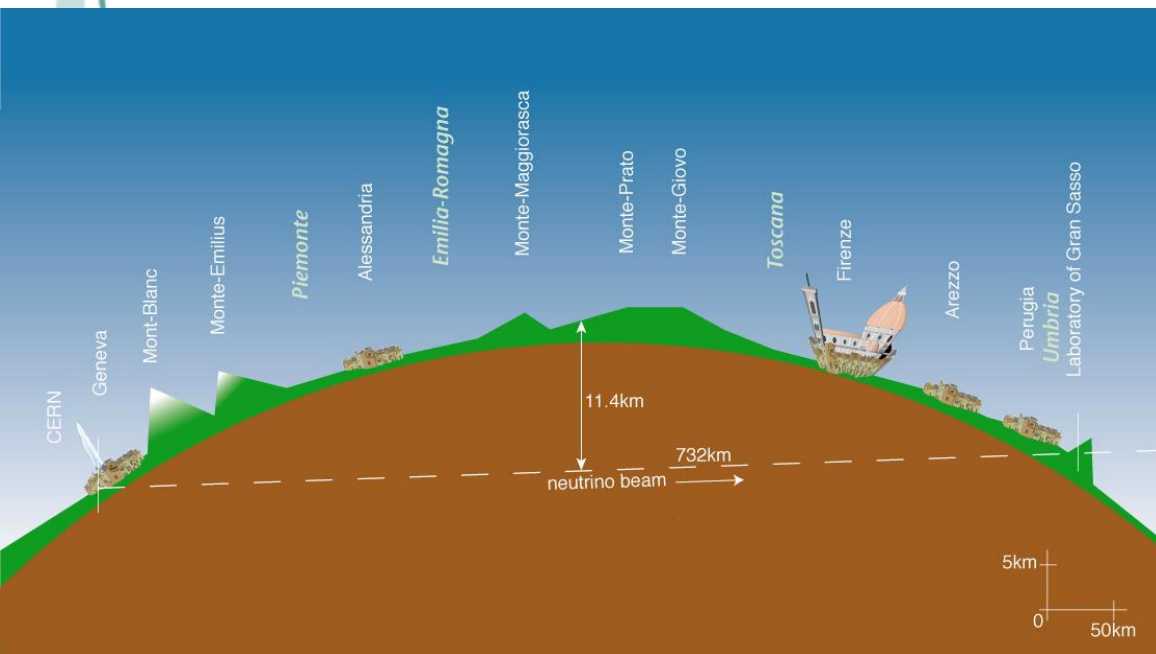


In Namibia, *very high energy (VHE)*  
*gamma-ray sources study*



**lapp.** => Slow control for the camera load/unload system

# Neutrino OPERA experiment in Gran Sasso



=> Brick life cycle management

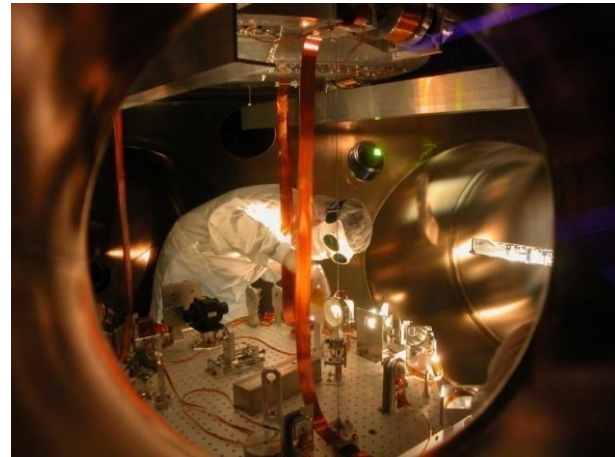
Brick :  
56 lead slices  
57 emulsions

# VIRGO experiment

Gravitational waves from astrophysical sources



Optical Michelson interferometer 3kms long



⇒ Data acquisition and control



# MUST : local and grid computing facility



## Today

- ~1400 cores
- 250 TB/GPFS
- 1 PB/DPM (ATLAS grid only)
- Dedicated 10Gb/s to LHCONE

## Grid VO supported

- WLCG (90% of activity)
  - ✓ ATLAS
  - ✓ LHCb
- EGI
  - ✓ GEANT4
  - ✓ CTA
  - ✓ ILC
  - ✓ EARTH SCIENCES
  - ✓ Regional VO
  - ✓ .....

## Local users activities

- Theoretical
- Mathematics
- Polymer research
- High frequency research
- ....

# A new computing room since October 2013

New green building with a computing room of 200 m<sup>2</sup> (Heat recuperation, free cooling ready).



A decorative wavy line in shades of blue and green curves along the left edge of the slide.

# Have a Nice Meeting!