

European Organization for Nuclear Research

General information

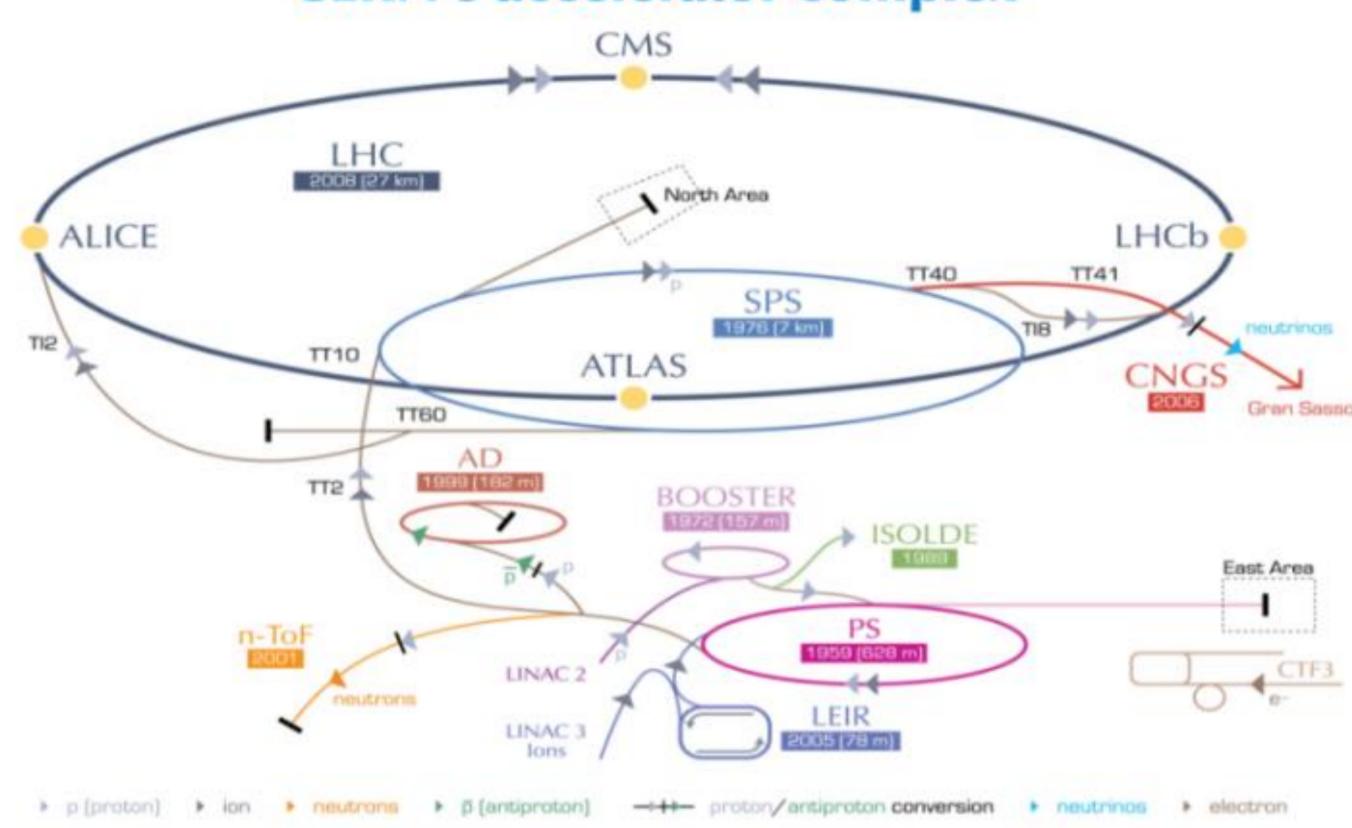
CERN operates the world's leading laboratory for particle physics. Its mission is fundamental physics, finding out what the Universe is made of and how it works.

Founded in 1954, CERN has become a prime example of international collaboration, with currently 20 Member States. The CERN Laboratory sits astride the Franco–Swiss border near Geneva. At CERN, complex scientific instruments are used to study the basic constituents of matter - the fundamental particles. The Large Hadron Collider - the LHC - is the flagship research facility at CERN. Housed in a 27 kilometer tunnel, it is the largest and most complex scientific instrument ever built.

per States (Dates of Accession) AUSTRIA (1959) BELGIUM (1953) BULGARIA (1999) CZECH FR (1993 FINLAND (1991 FRANCE (1953) CERMANY (1953 REECE (1953) ITALY (1953)

Facts and figures

CERN's accelerator complex



LHC Large Hadron Collider SPS Super Proton Synchrotron PS Proton Synchrotron AD Antiproton Decelerator CTF3 Clic Test Facility CNGS Cern Neutrinos to Gran Sasso ISOLDE Isotope Separator OnLine DEvice LEIR Low Energy Ion Ring LINAC LINear ACcelerator n-ToF Neutrons Time Of Flight

Manpower

- ~ 2300 staff
- ~ 1000 other paid personnel
- > 11000 registered users (from ~ 100 countries)

Budget

~1000 MCHF

> 5000 registered contractors

1954 CERN is born

1957 CERN's 1st Accelerator, the **S**ynchro**C**yclotron **1959** The **P**roton **S**ynchrotron

- **1968** G. Charpak revolutionizes detection
- **1971** 1st Proton collisions Intersecting Storage Rings **1976 Super Proton Synchrotron tunnel starts up**
- **1981** proton-antiproton collisions
- **1983** W and Z particles discovered
- **1989** Large Electron-Positron collider 1st injections 2008 LHC starts up
- 2012 ATLAS and CMS observe particle
 - consistent with the Higgs boson





HSE Organization

Occupational Health & Safety

Environmental Protection

Safety Officers and Advisors with delegated authority

CERN Safety Organization

Direct Responsibility Safety Hazards

The main hazards are:



Head office of HSE

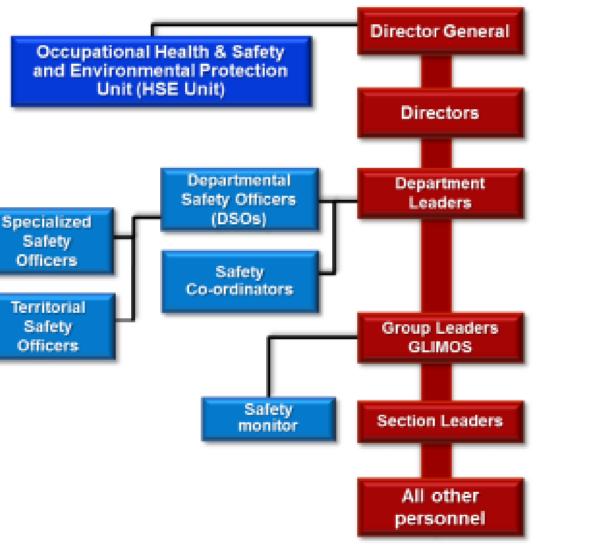
Radiation Protection Group

(Staff 44)

Dosimetry; Management of radioactive sources and wastes; operational radiation protection for accelerators, experiments and sites, radiographies, Instrument calibration, Instrumentation & Logistics, Research activities, etc...

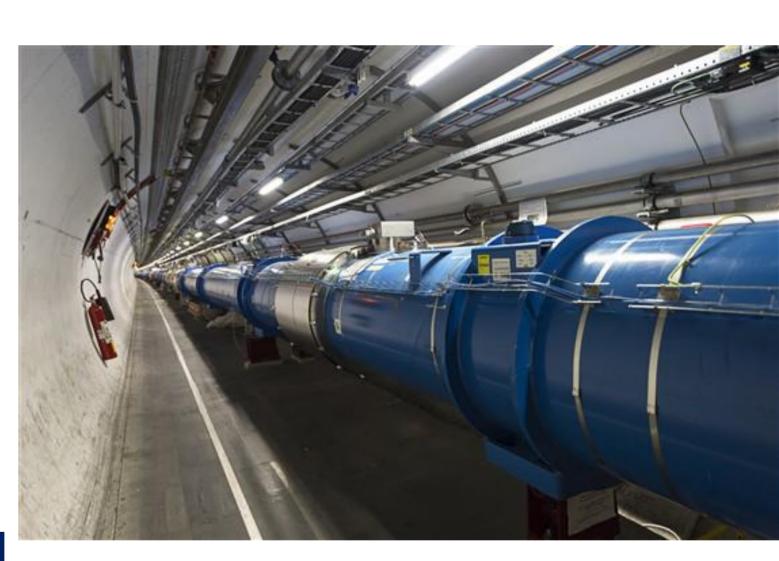
Safety Engineering and Environment Group (Staff 36)

Follow-up accident/incident, Environmental Protection, Experiments safety support, Prevention & Safety engineering support, Safety conformities review, Safety regulatory framework, support in call for tenders, Safety system computing support, Safety training awareness, etc...





- The annual accident statistics reveal the following top 3 categories:
 - Manual handling
 - Collision, false movement
 - Slips & trips
- A major concern is road safety, with an emphasis on cycling
- > A permanent challenge is related to "contractors safety"



The principle consolidation activities of the LHC machine during Long Shutdown 1 (2013 – 2014)

The main 2013-14 LHC consolidations

1695 Openings and final reclosures of the interconnections

splices

Complete reconstruc-Consolidation of the tion of 1500 of these 10170 13kA splices, installing 27 000 shunts

Installation of 5000 consolidated electrical insulation systems

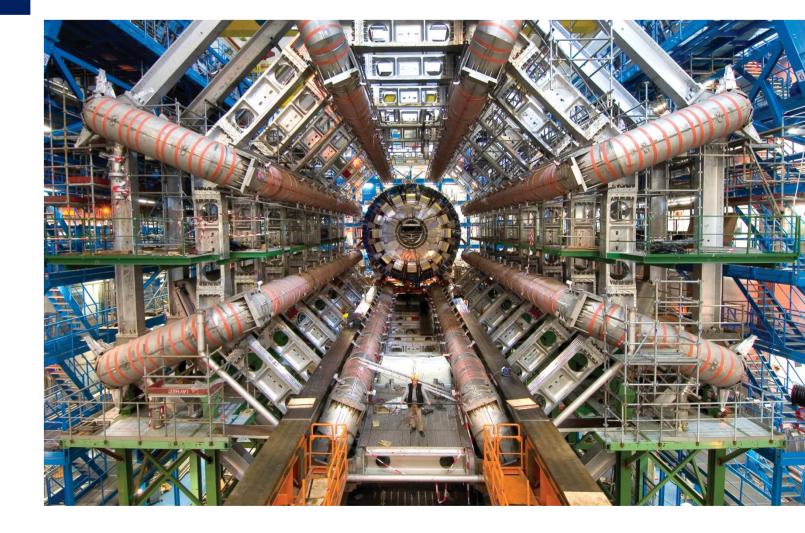
ments

300 000 electrical resistance measure-

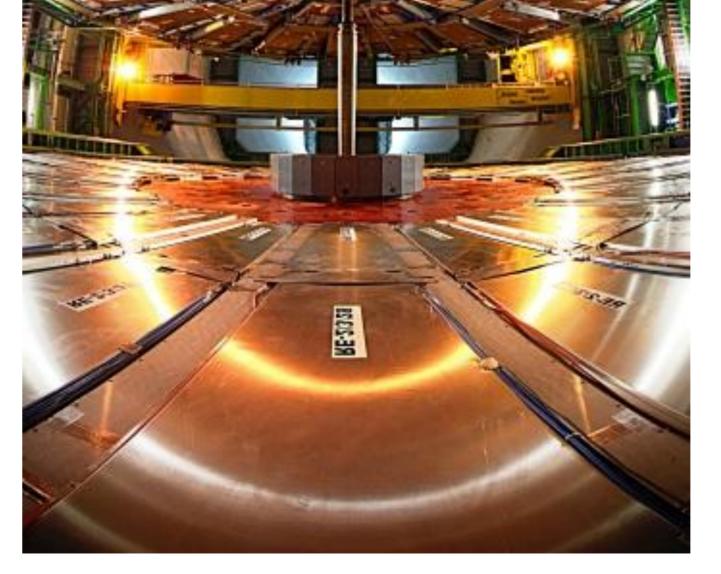
10170 orbital welding of stainless steel lines

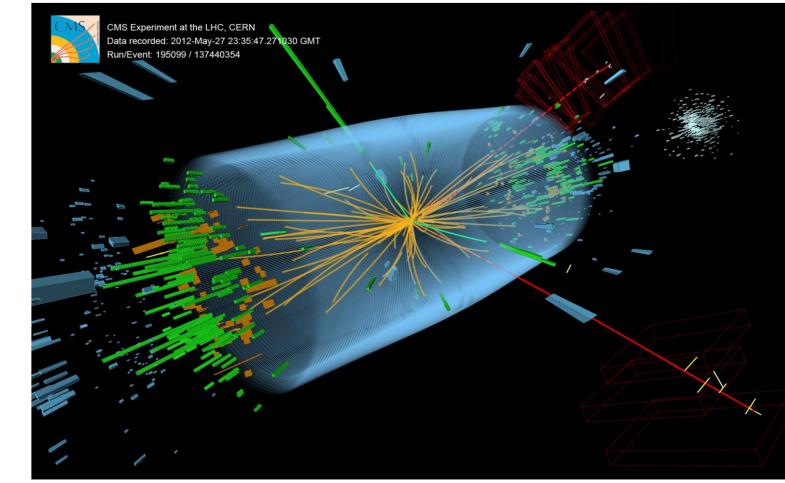
The Opening of CMS













International Technical Safety Forum ESRF, Grenoble, France, 21 – 24 May 2013

boxes

