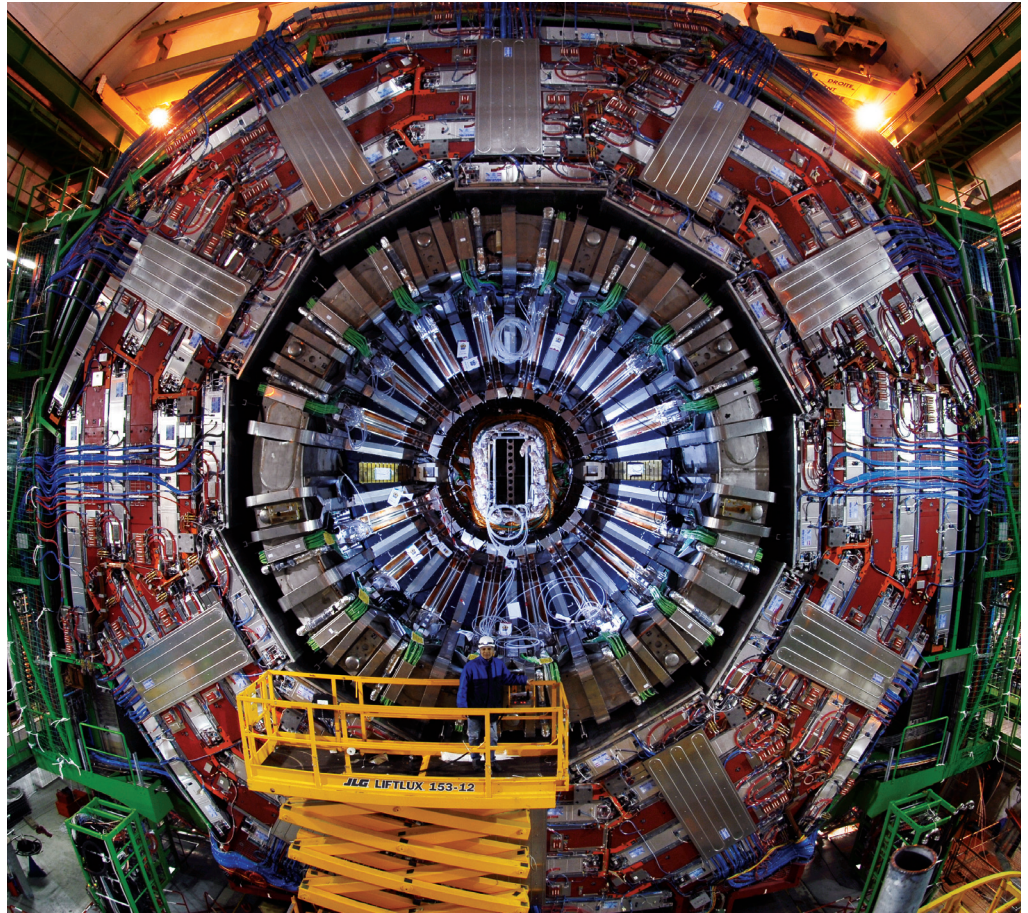


# The US and the CMS Experiment

Discoveries from the Compact Muon Solenoid experiment at the Large Hadron Collider at CERN in Geneva, Switzerland, promise to revolutionize our understanding of the universe.

With more than 1000 participants from 49 institutions across the country, US CMS is the largest national group in the 3,600-member international CMS collaboration. Supported by the US Department of Energy's Office of Science and the National Science Foundation, the US CMS collaboration consists of more than 430 physicists, nearly 200 graduate students and more than 300 engineers, technicians and computer scientists.

The US CMS collaboration plays a vital role in the operation of the CMS detector and analysis of data from LHC collisions. US groups made significant contributions to the construction and installation of nearly every aspect of the CMS detector. The US plays a major role in the construction and operation of the experiment's global network of computing facilities, contributing resources from eight computing centers. US scientists also continue to improve the highly sophisticated computing tools that enable physicists to operate the CMS detector, reconstruct the data, analyze it and, ultimately, make discoveries.



*The CMS detector, copyright CERN.*

## CMS Scientific Goals

CMS scientists will use the unprecedented amount of data collected by the CMS detector in the quest to answer these and other questions:

- Are there undiscovered principles of nature?
- What is the origin of mass?
- Do extra dimensions exist?
- What is dark matter?
- How can we solve the mystery of dark energy?
- How did the universe come to be?

## The CMS Detector

**Total weight:** 13,800 tons  
**Overall diameter:** 52 feet  
**Overall length:** 70 feet  
**Detection elements:** 100 million  
**Collaborating scientists:** 3,000  
**Collaborating countries:** 38  
**Location:** 330 feet underground in Cessy, France

## The US CMS Collaboration

**Participants:** More than 1000  
**Institutions:** 49 universities and 2 national laboratories  
**States represented:** 23 plus Puerto Rico  
**Ph.D. physicists:** More than 430  
**Graduate students:** Nearly 200  
**Cost of US construction project:** \$167 million  
**Construction contributions:** Leading role in muon detectors, calorimeters, charged particle tracking devices, and trigger and data acquisition systems  
**Computing contributions:** Resources from 8 computing centers