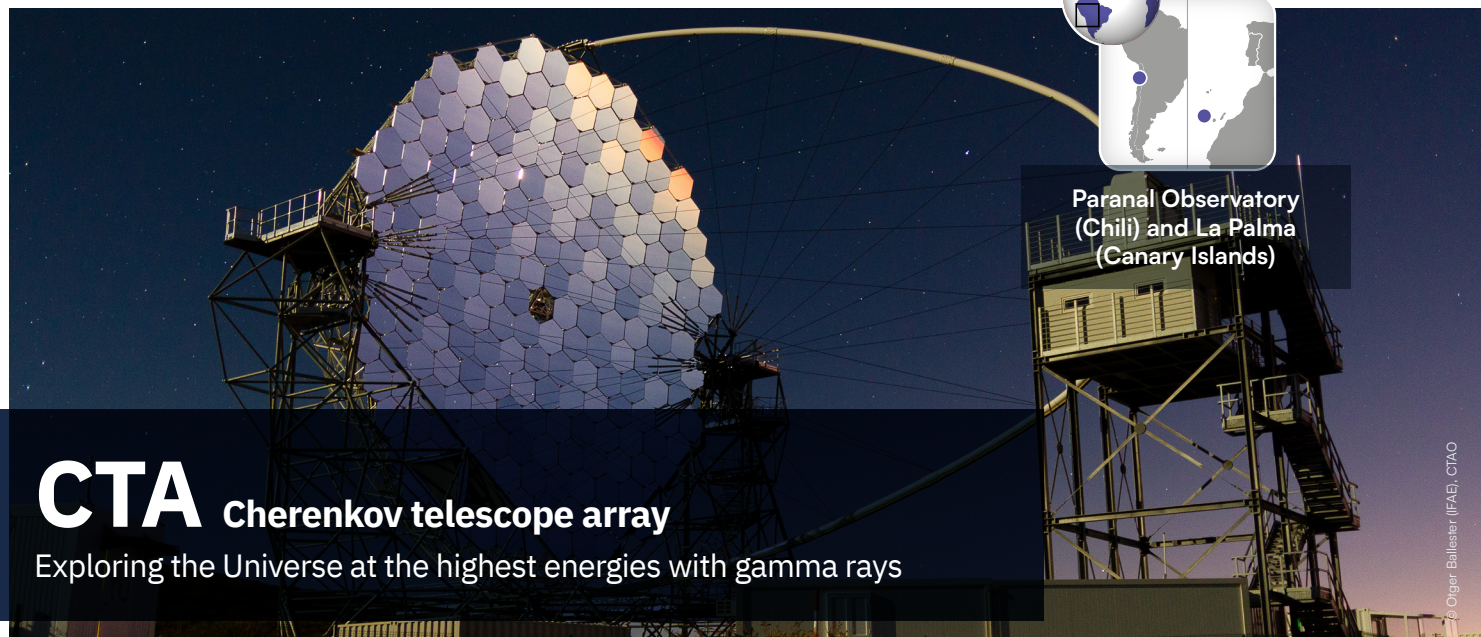


Very high energy gamma rays



Paranal Observatory (Chili) and La Palma (Canary Islands)



CTA Cherenkov telescope array

Exploring the Universe at the highest energies with gamma rays

Scientific leader: Stephen Fegan (LLR) *

Laboratories involved: APC (Paris), CPPM (Marseille), IJCLab (Orsay), LAPP (Annecy), LLR (Palaiseau), LP2I (Bordeaux), LPNHE (Paris), LUPM (Montpellier)

Nature: research infrastructure

Status: project under construction, involving mainly France, Germany, Italy, Japan, Spain

Website: <https://www.cta-observatory.org/>

Scientific objectives

CTA will study very high energy gamma-ray photons from the most violent phenomena in the Universe. Two sites are planned to observe the entire sky. The first, in the south of the globe at the Paranal Observatory in Chile, will be dedicated to the multiple sources in the central regions of our Galaxy. The second, in the north on the island of La Palma in the Canary Islands, will be dedicated to the study of extragalactic sources such as active galactic nuclei. CTA will consist of a network of Cherenkov telescopes of various sizes, observing the bursts of light emitted by particle cascades as very high-energy gamma-ray photons collide with the upper atmosphere.

Resources deployed

- More than 60 telescopes from 4 to 23 metres in diameter, dispatched over an area of several square kilometres. The telescope structures are approximately 8 to 45 metres high and weigh 8 to 100 tonnes.
- More than 3 000 high reflection mirror facets (90 centimetres to 2 meters in diameter) to focus the light on the telescopes' cameras.
- Three classes of telescopes to provide broad energy coverage from 1 to 1 000 billion times the energy of visible light (20 GeV to 300 TeV).
- 100 Petabytes of data generated in the first five years of operation.

100% of the sky is observable	1 400 collaboration members
30 years of operations	33 participating countries
200 institutes worldwide	€ 330M construction cost

IN2P3 CONTRIBUTIONS

- Design of fast electronic cameras (NectarCAM) for medium-sized telescopes.
- Design of the arches, camera frames, camera controllers, and motorisation of the 4 large telescopes.
- Simulations and optimisation of the array, starting with the CTA concept study in 2006.
- Development of computational methods for data analysis, formats, archiving and dissemination.

Other french laboratories involved

Irfu (CEA Saclay), IPAG (Grenoble), IRAP (Toulouse), LUTH(Meudon), OCA (Nice)

2008 Creation of the CTA consortium, 200 laboratories in 33 countries

2010-2013 Study to identify sites capable of hosting the observatory

2014 Creation of the legal entity CTA Observatory

2015 Selection of sites in La Palma (Canary Islands) and Mount Paranal (Chile)

2016 Construction begins on the northern site

2019 Validation of the qualification models for the proposed cameras and telescopes

2028-2030 Planned start of CTA

* Since 2020

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