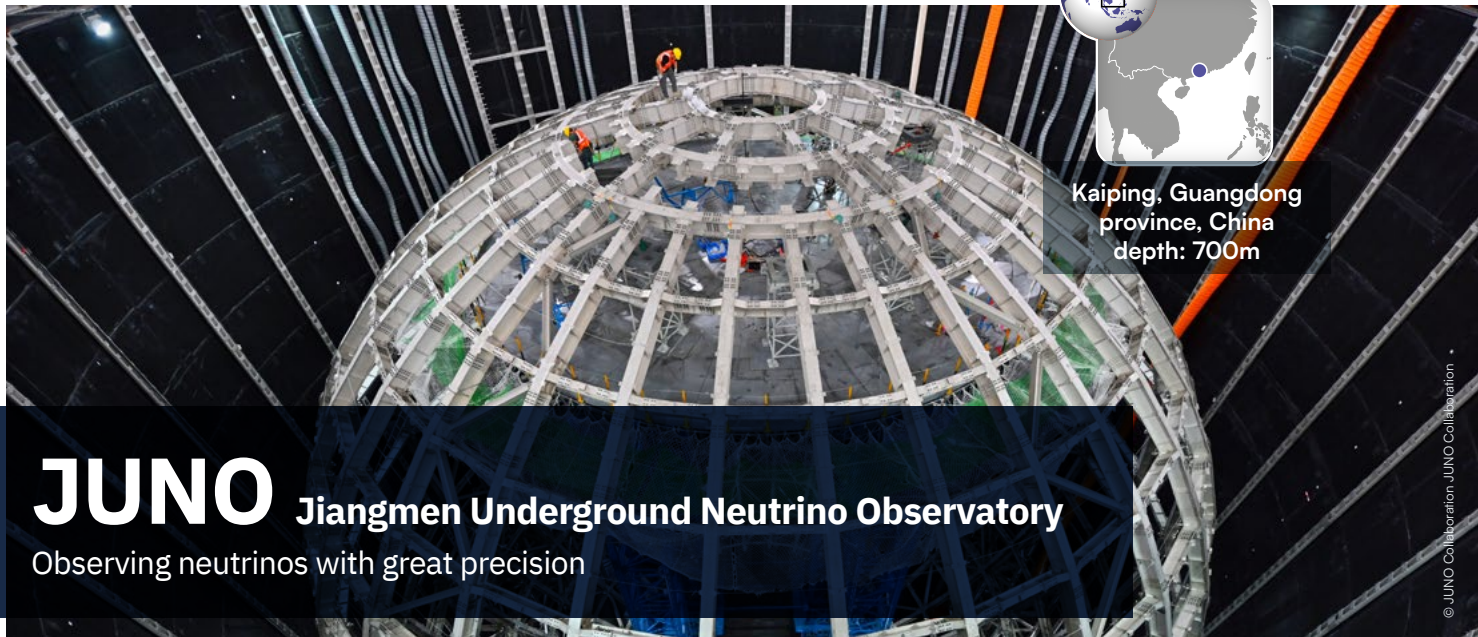


The origin, nature, masses and mixing of neutrinos



Kaiping, Guangdong province, China
depth: 700m



JUNO

Jiangmen Underground Neutrino Observatory

Observing neutrinos with great precision

Scientific leader: Marcos Dracos (IPHC) *

Laboratories involved: CC-IN2P3 (Lyon), CPPM (Marseille), IJCLab (Orsay), IPHC (Strasbourg), LP2i (Bordeaux), OMEGA (Paris), Subatech (Nantes)

Nature: research infrastructure

Status: international project under construction, mainly financed by the Chinese Academy of Sciences (CAS)

Website: <http://juno.ihep.cas.cn/>

Scientific objectives

JUNO is a detector of antineutrinos emitted by nuclear reactors. Its unprecedented size and accuracy will give access to the order of the masses of the three known neutrinos, and to a precise measurement of three of the five parameters describing their oscillations. These values will have implications for particle physics and cosmology. JUNO will also study neutrinos of terrestrial and extra-terrestrial origin (supernovae, atmosphere, sun), to better understand the quantity of certain radioactive elements on Earth and certain mechanisms that govern the evolution of the Universe.

Resources deployed

The detector is a transparent sphere 35.4 metres in diameter, filled with 20 000 tonnes of scintillating liquid that emits light as charged particles pass by. 42 000 photomultipliers spread around it will record the events. JUNO is buried 700 metres below ground so that it is not affected by the flow of cosmic particles. To detect any particles that reach it, it is immersed in a detection pool and topped with a trajectory graph. JUNO's energy resolution will be unprecedented: 3% for particles of 1 MeV.

20 000T of glittering liquid	35m in diameter
400 scientists	18 participating countries
77 institutions, 34 of which are Chinese	

- IN2P3 CONTRIBUTIONS**
- Improvement of the electronics of the cosmic particle trajectory graph (CPT).
 - Preparation of the electronics for reading the 3-inch photo multipliers (sPMT)
 - Participation in the selection of low radioactive materials for the construction of the detector

2014

End of the design phase.
Start of international collaboration

2015

Construction begins

2018

End of sPMT mass production and testing

2020

End of construction work

2021

Installation of equipment

2025

End of construction and start of operation

* Since 2019