

THE COLLABORATION

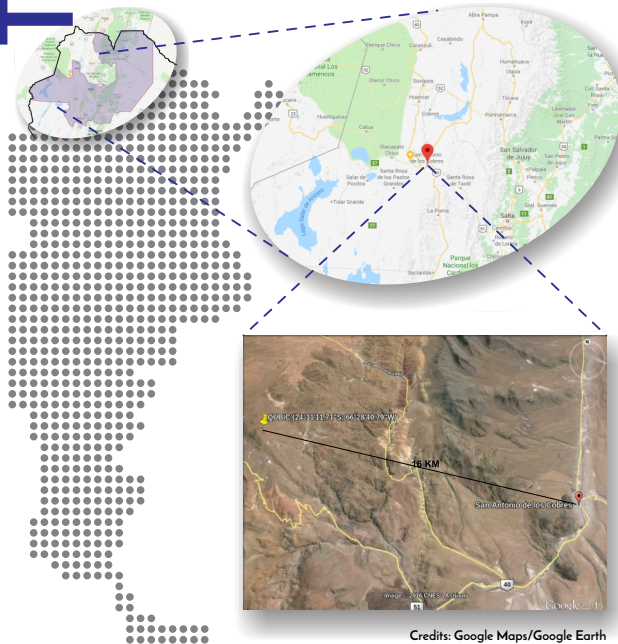


QUBIC is an international collaboration that involves several universities and laboratories in France, Italy, Argentina, the United Kingdom, Ireland and the United States. A prototype that includes the cryostat of the first module was integrated in 2018, in France.

THE SITE

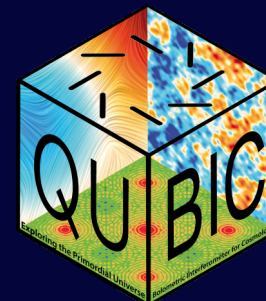
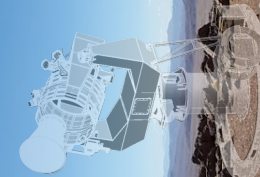
The first module of QUBIC will be placed in Alto Chorillo (Salta, Argentina) 16km from San Antonio de los Cobres. The installation of a second module at the Concordia station in Antarctica is planned.

QUBIC, in its final version, will include 6 telescopes installed on an area of approximately 10,000 m². This region is destined to become an "Astronomical Pole".



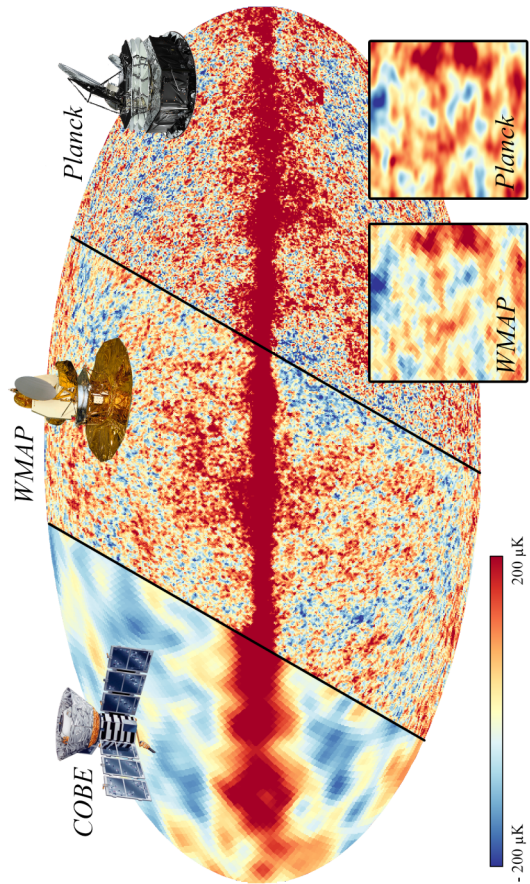
<http://qubic.in2p3.fr>
info@qubic.org

QUBIC: Exploring the primordial Universe



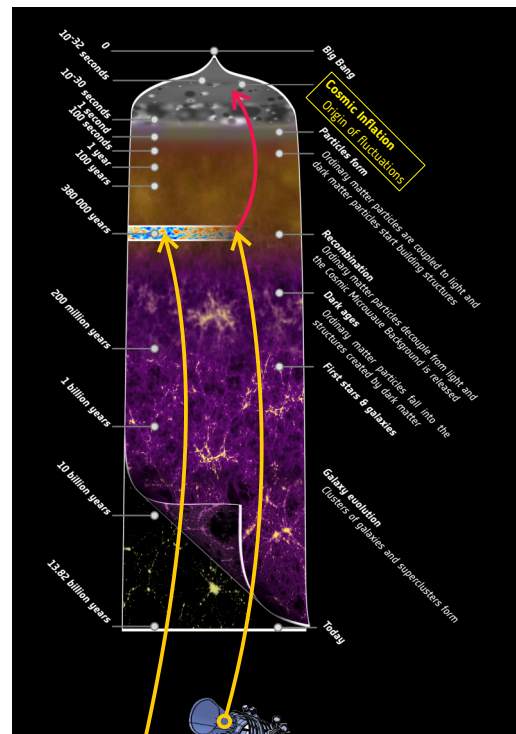
Q&U Bolometric Interferometer for Cosmology

CMB

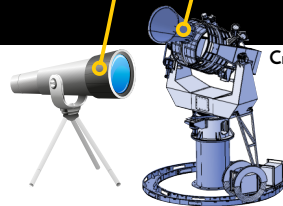


The cosmic microwave background (CMB) is the remaining radiation, relic of the origin of the Universe, which was left from the decoupling between the photons and the matter, an event that took place during the early Universe, 380,000 years after the Big Bang. Its detection in 1964 and its very small temperature fluctuations observed in 1992 thanks to the satellites COBE and WMAP, both discoveries celebrated by Nobel prizes, are among the main scientific advances of the 20th century. The deepened studies in the 21st century by the Planck space telescope, have led us to a deeper understanding of the history of our Universe.

POLARIZATION

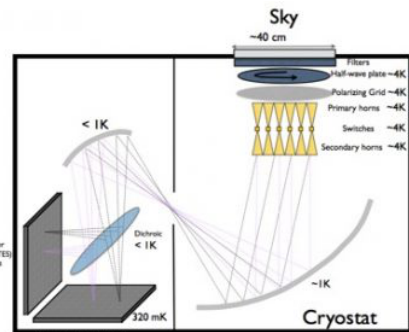
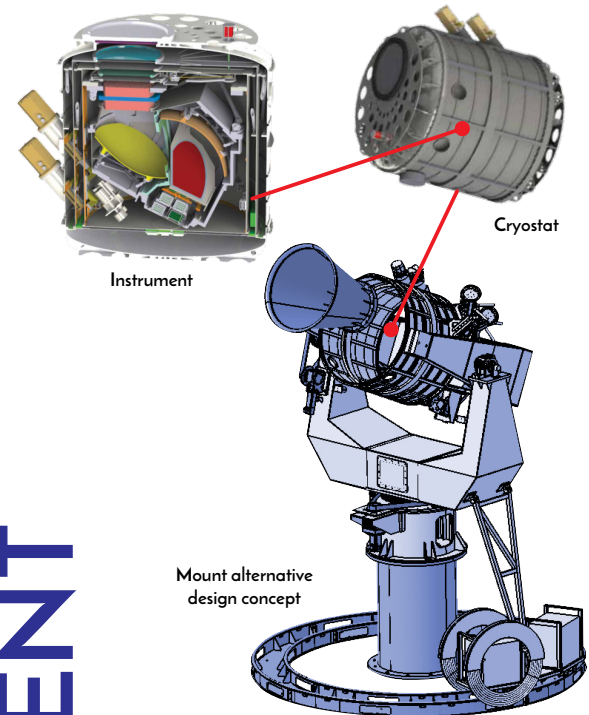


Credit: ESA/Misión Planck



QUBIC is a cosmology experiment that aims to measure the polarization of cosmic microwave background radiation with great precision. This study would offer us an invaluable insight into what happened immediately after the Big Bang; for example, it would allow us to test inflation theories that claim that there was an extremely rapid exponential expansion during the first 10^{-38} seconds of the Universe, an extremely small fraction of time.

THE INSTRUMENT



Scheme of the instrument

The very weak polarized signal of the CMB requires even more complex and sensitive experiments than those developed so far, in order to detect it. To face this challenge, the Collaboration in the QUBIC Project has developed a completely new instrument.