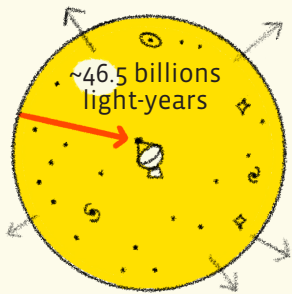


A STUDY OF THE ENTIRE UNIVERSE

Characterizing the first moments of the Universe

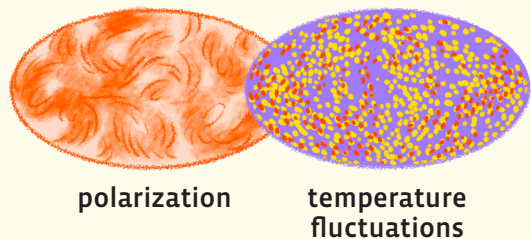
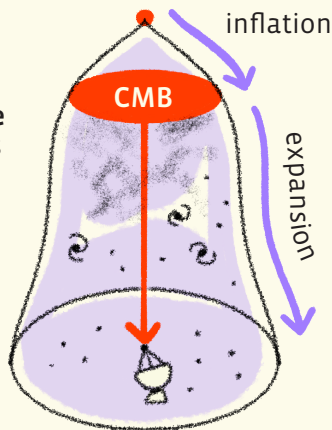
Cosmology brings together researchers, engineers, and technicians from various disciplines to study the origin and evolution of the Universe as a whole.



Our Universe is expanding and light takes time to reach us. With extremely sensitive instruments and methodical observations, we can detect faint signals from the Universe's earliest moments.

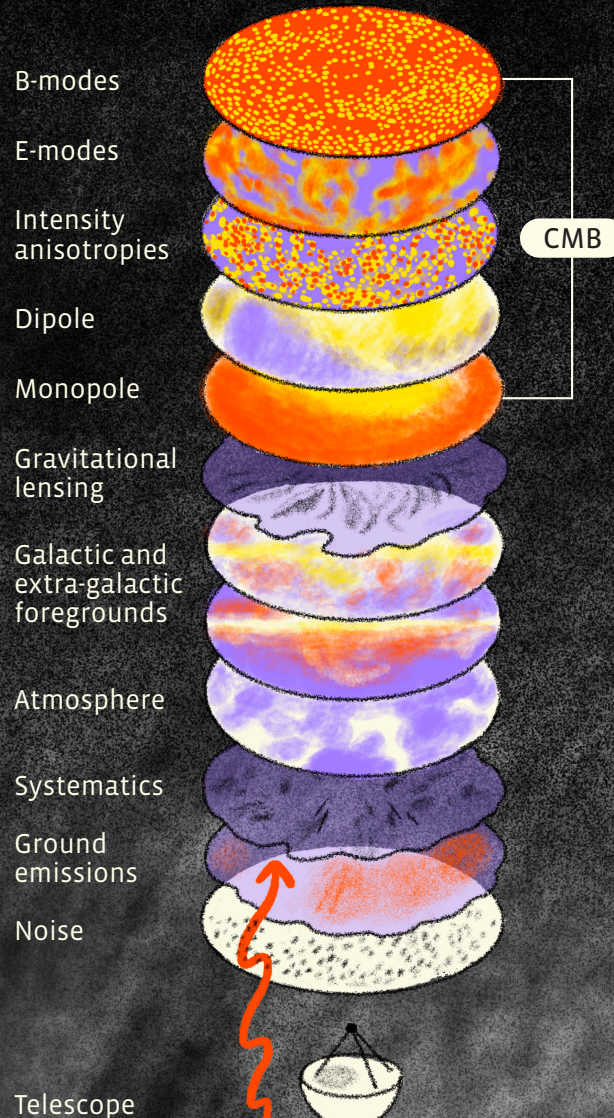
The oldest map of our Universe

The **Cosmic Microwave Background (CMB)** was emitted just after the Big Bang. It contains an imprint of the high-energy physics which dominated the Universe when it was only 380,000 years old (0.003% of its current age).



FILTERING SIGNALS BY HOLISTIC MEASUREMENTS

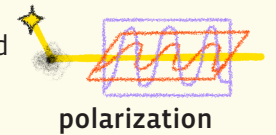
Cosmologists must characterize and remove multiple layers of contaminants to uncover the primordial CMB signal.



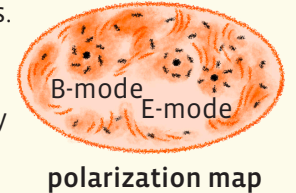
A MILESTONE FOR COSMOLOGY AND BEYOND

Hints from polarization

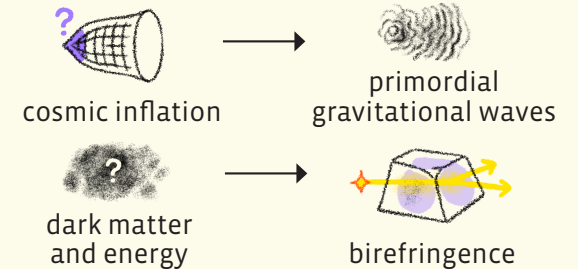
The CMB is slightly **polarized** – the electric field of the associated photons oscillated in a preferred direction after scattering off particles like electrons.



Maps of the CMB's polarization are key to characterizing the Early Universe and identifying its composition.

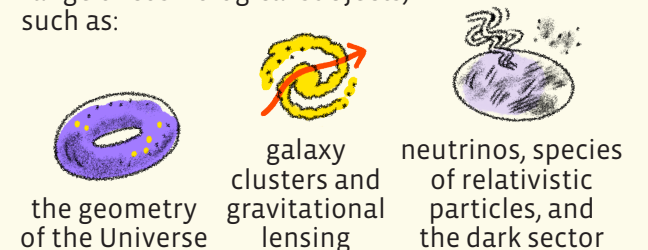


CMB polarization maps are used to test physical theories like Cosmic Inflation and may help us understand the fundamental nature of Dark Matter and Energy.



Further applications

Through the development of an **open-source** toolbox for CMB data analysts, SciPol will make a significant impact on a broad range of cosmological subjects, such as:



OUR MISSIONS



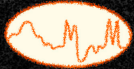
CHARACTERIZE
the early universe,
its evolution, and the
fundamental laws of physics



STUDY
late and early Universe via
measurements of cosmic
microwave background
anisotropies



DELIVER
open-source, cluster
and laptop friendly
JAX-powered tools



DEVELOP
novel methods and high
performance algorithms for
CMB data analysis and their
scientific exploitation



DISSEMINATE
knowledge, communicate
and engage the general public



MODEL
instrumentation,
environment and
astrophysical emissions

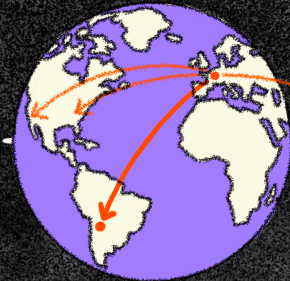
ABOUT SciPol

SciPol is a research project
led by Josquin Errard which has
been funded by the European
Research Council since 2023.

SciPol aims at characterizing the
early Universe through the analysis
of cutting-edge Cosmic Microwave
Background observations, with
an innovative mitigation of the
instrumental, astrophysical
and environmental
systematics.



Find out more at
<https://scipol.in2p3.fr/>

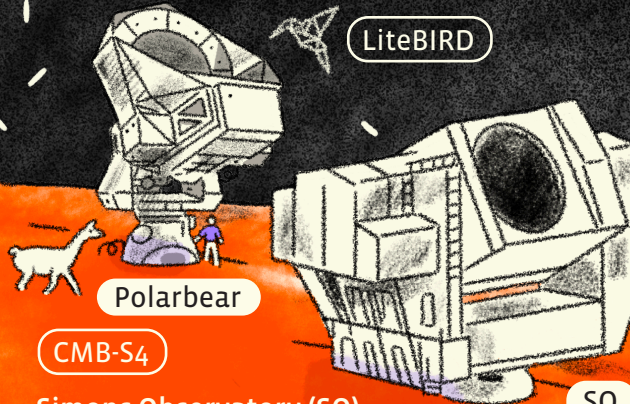


SciPol

SCIENCE FROM THE
LARGE-SCALE COSMIC
MICROWAVE BACKGROUND
POLARIZATION STRUCTURE



Unearthing the Rosetta Stone of the Universe



Polarbear

CMB-S4

Simons Observatory (SO)
is a state-of-the-art CMB project
operating from Atacama desert, Chili.

SO
LAT



SO
SAT

CMB S4



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