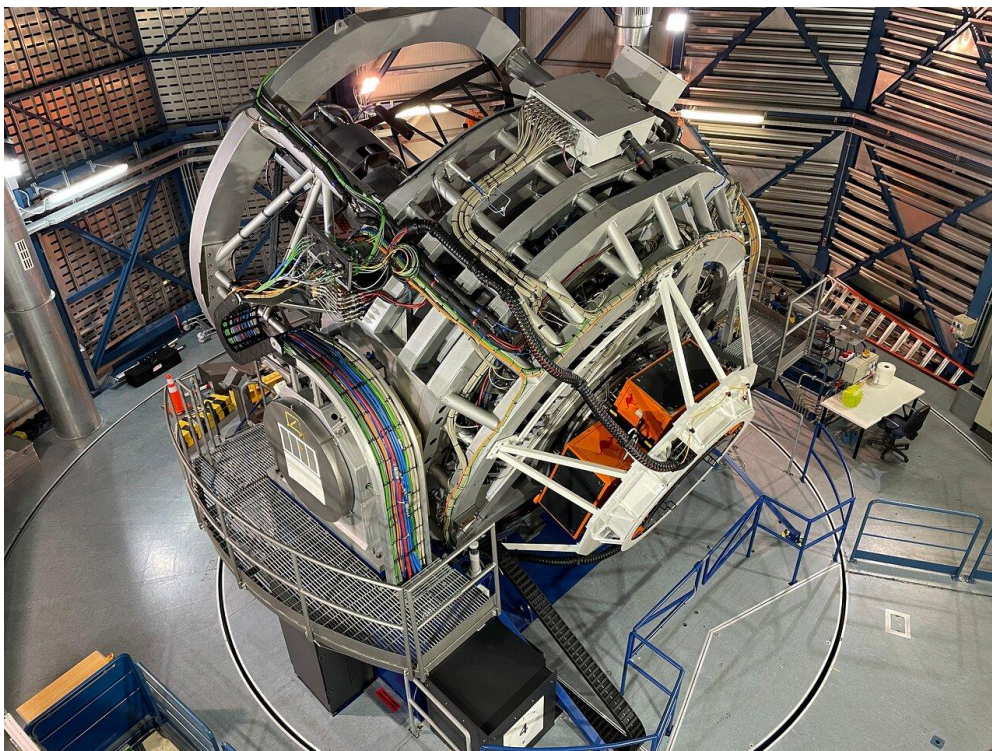


The CAB participates in 4MOST: successful first observations to unveil the composition and dynamics of the southern sky

## First Light for 4MOST Marks a New Era of Spectroscopic Surveys — CAB Scientists Contribute to a Global Milestone



This image shows ESO's VISTA telescope and its 4MOST instrument. Credit: AIP/A. Saviauk

**04'dec.'25.-** The 4-metre Multi-Object Spectroscopic Telescope (4MOST), one of the most ambitious astronomical facilities ever built for wide-field spectroscopy, has achieved its long-awaited first-light at the European Southern Observatory's (ESO) Paranal Observatory in Chile. This milestone marks the beginning of a new era in large-scale spectroscopic mapping of the sky.

Installed on the VISTA telescope at Paranal observatory in Chile, 4MOST is designed to collect light from more than 2,400 astronomical objects simultaneously, feeding it into multiple spectrographs to measure the chemical composition, motions, and distances of stars and galaxies across the southern sky. Over the next decade, 4MOST will deliver tens of millions of spectra, providing

essential data for a wide range of scientific programmes — from the structure of the Milky Way to the evolution of distant galaxies and active galactic nuclei.

At the **Centro de Astrobiología (CAB, CSIC–INTA)**, two scientists are actively involved in the development and scientific exploitation of 4MOST. Dr Luca Costantin, member of the WAVES Survey and leader of the Structural Components of Galaxies Working Group, has played a central role in developing the scientific framework that will guide part of 4MOST's discovery efforts. "Reaching first-light is a truly exciting milestone," said Dr. Costantin "4MOST will allow us to explore the evolution of galaxies and the large-scale structure of the Universe in ways that were simply not possible before."

Dr Lee Patrick is a core member of the survey that will study stars in two of our nearest neighbour galaxies, the 1001MC Survey, and also emphasized the importance of this new phase: "Some of the first 4MOST science observations will be of stars in the Magellanic Cloud galaxies early next year. These observations will allow us to obtain excellent data for more than 1 million stars in these galaxies in a way that has never been possible before and will transform our understanding of the stars and populations of stars in these galaxies."

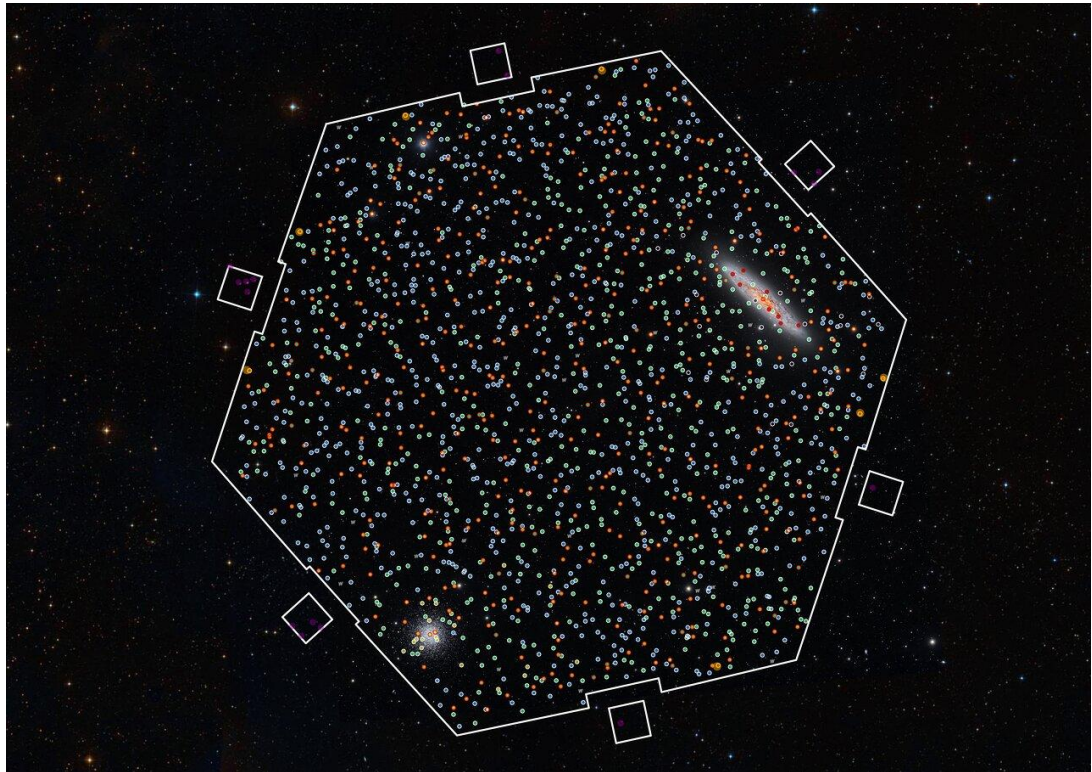
The 4MOST Consortium, led by the Leibniz Institute for Astrophysics Potsdam (AIP) in collaboration with ESO and over twenty research institutions across Europe, will soon begin its operational phase. The first scientific observations are expected in early 2026, ushering in an unprecedented decade of discovery.

CAB's participation in 4MOST reinforces Spain's strong role in major international collaborations within the European community. Through their involvement in survey science and infrastructure working groups, CAB researchers contribute to data quality control, analysis pipelines, and the interpretation of the resulting spectra.

"This milestone is the result of more than fifteen years of international collaboration, innovation, and perseverance," added Dr. Costantin. "For CAB, it is an opportunity to contribute directly to one of the most powerful instruments ever built for optical spectroscopy, and to the discoveries it will enable."



## MORE INFORMATION



The first-light field showing the use of the 2400 fibres of the 4MOST instrument. The field shows two prominent targets, the Sculptor galaxy (right of the image) and the globular cluster NGC288 (bottom left). 4MOST collected a spectrum for each of these individual objects, allowing us to study their properties such as chemical composition or temperature. Credit: AIP/Background: Harshwardhan Pathak/Telescope Live

## Contact

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## About CAB

The [Centro de Astrobiología](#) (CAB) is a joint research center of INTA and CSIC. Created in 1999, it was the first center in the world dedicated specifically to astrobiological research and the first non-US center associated with the NASA Astrobiology Institute (NAI), currently the NASA Astrobiology Program. It is a multidisciplinary center whose main objective is to study the origin, presence, and influence of life in the universe through a transdisciplinary approach. In 2017, the CAB was awarded by the Ministry of Science and Innovation as a "María de Maeztu" Unit of Excellence.

The CAB has led the development of the [REMS](#), [TWINS](#) and [MEDA](#) instruments, operational on Mars since August 2012, November 2018, and February 2021, respectively; as well as the science of the [RLS and RAX](#) Raman instruments, which will be sent to Mars at the end of this decade as part of the ExoMars mission and to one of its moons in the MMX mission, respectively. In addition, it is developing the [SOLID](#) instrument for the search for life in planetary exploration. The CAB also co-leads, together with three other European institutions, the development of the [PLATO](#) space telescope, and participates in various missions and instruments of great astrobiological relevance, such as [MMX](#), [CARMENES](#), [CHEOPS](#), [BepiColombo](#), [DART](#), [Hera](#), the [MIRI](#) and [NIRSpec](#) in [JWST](#), and the [HARMONI](#) in [ESO's ELT](#) (Extremely Large Telescope).

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