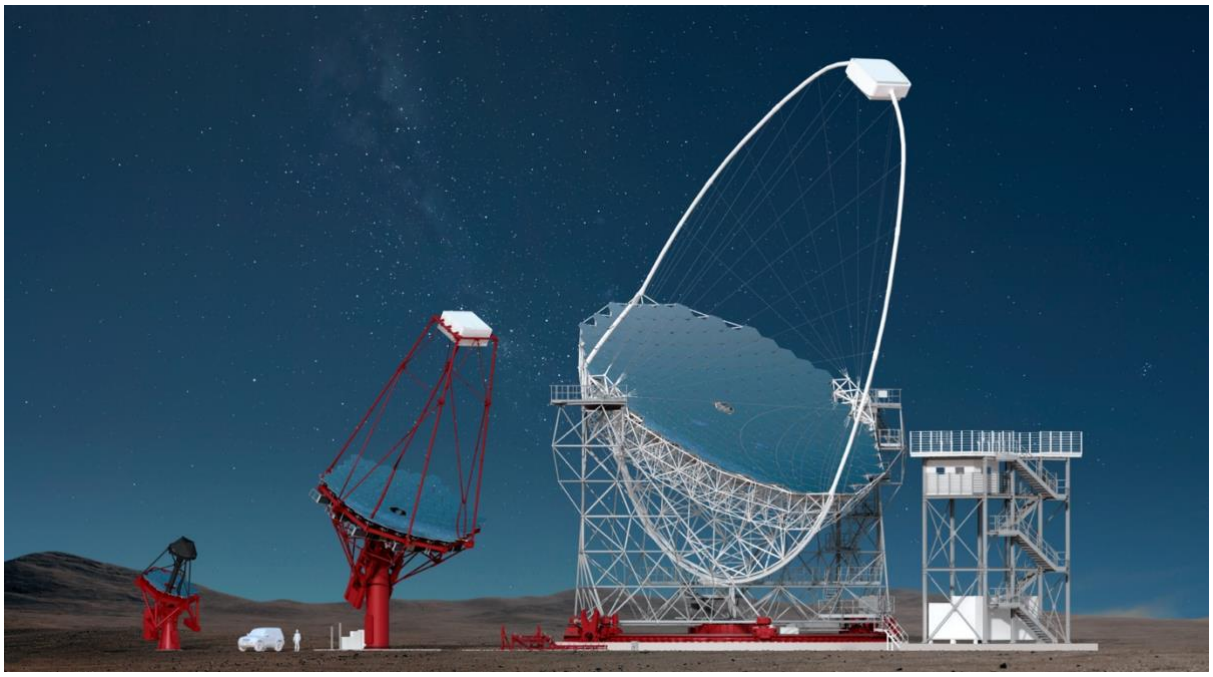
The CTAO Becomes a European Research Infrastructure Consortium

• The CTAO ERIC marks a new chapter in European astronomy, advancing the construction of the world's most advanced gamma-ray observatory.

• The ERIC status provides the CTAO with legal stability and administrative advantages for operating and expanding globally.



Three classes of telescopes are required to cover the full CTAO energy range (20 GeV to 300 TeV): The Large- Sized Telescope (LST), the Medium-Sized Telescope (MST) and the Small-Sized Telescope (SST). While the individual telescopes may vary in size and design, all of them are composed of segmented mirrors that reflect the Cherenkov light to a high-speed camera that captures and converts it into digital data. Credit: Gabriel Pérez Díaz, IAC

Bologna, Italy, 7 January 2025 – On January 7, 2025, the European Commission established the Cherenkov Telescope Array Observatory (CTAO) as a European Research Infrastructure Consortium (ERIC), furthering its mission to become the world's largest and most powerful observatory for gamma-ray astronomy. The creation of the CTAO ERIC will enable the Observatory's construction to advance rapidly and provide a framework for distributing its data worldwide, significantly accelerating its progress toward scientific discovery.

"The ERIC will streamline the construction and operation of the Observatory in a way that will undoubtedly help the CTAO attract new talent and investment as it continues to grow," stated Dr. Aldo Covello, Chair of the Board of Governmental Representatives (BGR). "The ERIC status provides the CTAO with the legal stability and administrative advantages it needs to be sustainable in its worldwide operations and impact."

The CTAO ERIC was established with the international support of 11 countries and one intergovernmental organisation that contribute to the technological development, construction and operation of the Observatory. The BGR represents this group and has been responsible for the preparation of the ERIC.

The CTAO Community in Spain

The Spanish community, composed of the institutions CERES-UAB, CIEMAT, IAA-CSIC, IAC, ICCUB, ICE-CSIC, IFAE, IFT UAM-CSIC, IPARCOS-UCM, PIC, UAH, and UJA, has significantly contributed to the construction and commissioning of the various components of the observatory, as well as to software development and the definition of the project's scientific objectives.

The IFT joined the CTAO in 2017 and has since played a central role in understanding the impact that the future observatory will have on fundamental physics. Specifically, in the search for dark matter in gamma rays, as explained by Dr. Miguel A. Sánchez-Conde, lead researcher of the CTAO group at IFT and Scientific Coordinator of the Fermi-LAT Gamma-Ray Telescope: "Not only are precise predictions of the expected signal made, but also analysis tools specifically designed for such searches are developed."

A Milestone in European Astronomical Research

“We are grateful to our founding members for their support and to the European Commission for reaffirming their confidence in the CTAO as a world-class research infrastructure,” said Dr. Stuart McMuldroch, CTAO Managing Director. “This milestone represents the culmination of years of dedicated planning by the diverse teams contributing to the success of the Observatory. With the CTAO ERIC, we now have a powerful instrument to consolidate our efforts and drive the project forward.”

The ERIC not only provides the Central Organisation with a formal framework to accept and operate the current telescope prototypes, but it also allows for the immediate start of construction for the full array of more than 60 telescopes across both telescope sites in Spain and Chile. On the CTAO-North site, where the Large-Sized Telescope prototype (LST-1) is under commissioning, three additional LSTs and one Medium-Sized Telescope (MST) are expected to be built in the next 1-2 years. Meanwhile, on the CTAO-South site, the first five Small-Sized Telescopes (SSTs) and two MSTs are expected to be delivered by early 2026. Thus, with the aid of the ERIC, the Observatory is expected to be able to operate intermediate array configurations as early as 2026. These sub-sets of the final arrays will already be more sensitive than any existing instrument, bringing the Observatory’s early science within reach.

The impact of the ERIC will extend beyond hardware, influencing several other key areas. In the coming months, the Observatory will prepare to integrate and operate advanced software designed to control the telescopes and their supporting devices on-site, as well as to manage data processing. Additionally, the ongoing recruitment campaign will continue across all CTAO facilities, including the CTAO Headquarters in Italy and the CTAO Science Data Management Centre in Germany, ensuring robust support for these developments.

The CTAO was promoted to a "Landmark" on the European Forum on Research Infrastructure (ESFRI) Roadmap 2018 and was ranked as the main priority among the new ground-based infrastructures in the ASTRONET Roadmap 2022-2035. Now, after years of extensive preparatory work, and with the final legal entity in place, the CTAO solidifies its standing in the global research community, facilitating synergies with other international organisations and observatories.

"The ERIC status strengthens the presence of the CTAO in Europe and its role as a key player in the European Research Area, but the support we have received and the scope of the CTAO ERIC's influence goes far beyond European borders," explained Prof. Federico Ferrini, co-Managing Director. "To build and operate the world's largest gamma-ray observatory that serves the ambitious needs of the global scientific community, we are counting on an increasing number of partners from around the world."

The CTAO ERIC Members are Austria, Czech Republic, European Southern Observatory (ESO), France, Germany, Italy, Poland, Slovenia and Spain. Additionally, Switzerland is an Observer, Japan is a Strategic Partner and Australia is a Third Party.

Commission Implementing Decision (EU) 2025/7 of 7 January 2025 setting up the Cherenkov Telescope Array Observatory ERIC (CTAO ERIC) is available on the Official Journal of the European Union.

El IFT

The IFT (Institute for Theoretical Physics IFT-UAM/CSIC) was officially created in 2003 as a joint research center belonging to the Spanish National Research Council (CSIC) and the Autonomous University of Madrid (UAM). It is the only Spanish center dedicated entirely to research in Theoretical Physics. The IFT members develop research in the frontiers of Elementary Particle Physics, Astroparticles and Cosmology, in order to understand the fundamental keys of Nature and the Universe. They are also leading many research projects, both at the national and international level. The IFT is part of the strategic line `Theoretical Physics and Mathematics´ of the Campus of International Excellence (CEI) UAM+CSIC established in 2009. Since 2012, it is credited as Severo Ochoa Centre of Excellence. Besides purely scientific activity, in the IFT is also conducted intensive training tasks of young researchers and professionals through the graduate program in Theoretical Physics with mention of excellence from the CEI and the Ministry of Education. In addition, the Institute carries out the important task of transferring knowledge to society through several outreach programs.