Contribution ID: **209** Type: **Oral**

Performance and Characteristics of the First LACT Telescope

Thursday 28 August 2025 16:50 (25 minutes)

The Large Array of imaging Atmospheric Cherenkov Telescopes (LACT) consists of 32 telescopes, each with a 6-meter aperture, arranged within the array of the Large High Altitude Air Shower Observatory (LHAASO). LACT will leverage its high angular resolution in combination with LHAASO's world-leading capability in gamma-proton discrimination to conduct detailed structural observations of very-high-energy gamma-ray sources. This will enable in-depth studies of particle acceleration processes and radiation mechanisms under extreme astrophysical conditions such as ultra-strong magnetic fields, super-dense matter states, and ultra-intense gravitational environments. The project aims to achieve internationally leading, breakthrough progress in understanding the origins and acceleration mechanisms of very-high-energy cosmic rays.

Following preliminary research and development, we have completed the design and prototype verification of the telescope mounting turntable. Significant progress has been made in the development of novel spherical mirrors, with some performance indicators reaching or even surpassing those of similar international products. We have also achieved domestic production of large-aperture ultraviolet bandpass filters and light concentrators.

Currently, the prototype of the LACT telescope mounting turntable has been successfully constructed at the LHAASO site, with all technical parameters meeting the expected targets. The Davies-Cotton mirror system has been installed and preliminarily commissioned, achieving the desired optical performance. The pointing calibration system has also been installed and tested.

Looking ahead, the plan is to complete the construction of eight telescopes by 2026, with concurrent scientific operations beginning during the construction phase. The full array of 32 telescopes is scheduled to be completed by 2028. Upon completion, LACT will become the most sensitive and highest angular-resolution array of Cherenkov telescopes in the world.

Collaboration you are representing

Authors: 王, 玉东 (中国科学院高能物理研究所); Mr FENG, shaohui (中国科学院高能物理研究所); ZHANG, Shoushan (Institute of High Energy Physics, CAS); Ms GENG, lisi (中国科学院高能物理研究所)

Presenter: 王, 玉东 (中国科学院高能物理研究所)

Session Classification: High-Energy Astrophysics and Cosmic Rays

Track Classification: High-Energy Astrophysics and Cosmic Rays