

The 2nd LHAASO SYMPOSIUM



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From ASTRI-Horn to ASTRI-1: Advancing the ASTRI Project

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The ASTRI Project, led by the Italian National Institute for Astrophysics (INAF), is developing a nine-telescope array for very high-energy gamma-ray astronomy in the 1–200 TeV range, known as the ASTRI Mini-Array, which is currently being installed at the Teide Observatory in Tenerife. A key milestone was the ASTRI-Horn telescope, a prototype of a compact aplanatic dual-mirror imaging atmospheric Cherenkov telescope (4 m diameter), pioneered the Schwarzschild-Couder optical design for Cherenkov observations. With its 8° wide field of view (FoV), high angular resolution, and nearly uniform sensitivity across the entire FoV, ASTRI-Horn successfully detected the Crab Nebula in 2018. After a major refurbishment (2020–2022), it has been extensively used for gamma-ray and cosmic-ray studies. Recent observations (2022–2024) have provided essential inputs to the ASTRI Mini-Array, particularly in validating the data analysis pipeline.

The first ASTRI Mini-Array telescope, ASTRI-1, started the commissioning phase in November 2024 and is now fully operational. Maintaining the same innovative optical design, large FoV (10°), and high angular resolution, ASTRI-1 has already delivered promising results from systematic observations of the Crab Nebula, accumulating hundreds of hours of data under different sky illumination conditions and zenith angles. In this contribution, we highlight the ASTRI-1 key performance characteristics obtained during commissioning phase, providing a first assessment of its capabilities and laying the groundwork for the scientific exploitation of the full Mini-Array.

Summary

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