EXECUTIVE SUMMARY

The ASTRI mini-array at Teide Observatory

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Context

The ASTRI Mini-Array is an international project led by the Italian National Institute of Astrophysics (INAF) to be installed at the Teide Observatory, in Tenerife, to observe the Very High Energy sky in the range from 1 TeV up to 100 TeV and beyond. The ASTRI Mini-Array technology is based on the ASTRI-Horn prototype, a small-sized Cherenkov telescope (SST) developed by INAF and characterized by a dual-mirror optical system and curved focal surface covered by a SiPM sensors camera which is managed by a fast front-end electronic. The ASTRI Mini-Array Project is developed by the ASTRI Collaboration in all its aspects from the design, construction and implementation of the entire hardware and software system, including a dedicated off-site Data Center, to the final scientific products.

Aims

The status of the entire ASTRI Mini-Array Project is presented in this work also including the expected performances, the operations and the scientific program.

Results

ASTRI Mini-Array is composed by 9 dual-mirror Cherenkov telescopes ASTRI-type to be deployed at Observatorio del Teide (Tenerife, Canary Islands) starting from the end of 2021. The project is providing all the systems and sub-systems (hardware, software and infrastructures) needed for operating the telescopes, acquiring, archiving, analyzing and distributing scientific data. Thanks to its sensitivity better than current IACTs (E > 5 TeV), its Energy/Angular resolution: ~10% / ~0.05° (E=10 TeV) and the Wide FoV (>10° - with homogeneous off-axis acceptance), ASTRI Mini-Array is going to play a major role in the observation of the gamma ray sky at the higher energies. The ASTRI Mini-Array will start scientific observations in 2024 with a 4 (core science) + 4 (observatory science) year program.