

Extragalactic Observatory Science with the ASTRI Mini-Array at the Observatorio del Teide

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Context

The ASTRI Mini-Array is a system of nine imaging atmospheric Cherenkov telescopes to be deployed at the *Observatorio del Teide* (Tenerife, Spain). In a first phase, the instrument will be operated as an experiment, with an observation schedule focused on primary science cases at multi-TeV energies (origin of cosmic rays, cosmology and fundamental physics, GRBs and multi-messenger astrophysics). Afterwards, a guest-observer observatory phase will follow, in which other significant targets will be pointed at.

Aims

In this contribution, we focus on this second phase, presenting the observational feasibility of the most relevant extragalactic γ -ray emitters (high-synchrotron peaked blazars, Seyfert galaxies, self-interacting dark matter dominated dwarf spheroidal galaxies) and astrophysical processes detectable over long-term time scales that best complement and expand the ASTRI Mini-Array core science.

Methods

In order to derive our results, detailed simulations have been performed by means of the most up-to-date ASTRI Mini-Array instrument response functions.

Results

The prospects of observing extragalactic targets with the ASTRI Mini-Array include the characterization of spectral shape and features of the multi-TeV emission from the considered classes of AGN with short-to-long duration (5 h to 200 h) observations, the detection of sources not yet observed at TeV energies, the improvement of the constraints on cross section and lifetime of dark matter particles with 100 h observations of best-choice dwarf galaxies, and the possibility to simultaneously observe sources falling in the same field of view (up to a few degrees) with dedicated pointings.