Observatory Galactic Science with the ASTRI Mini-Array during the observatory phase of the project

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Context

The ASTRI Mini-Array is a project of nine imaging atmospheric Cherenkov telescopes that will be built at the *Observatorio del Teide* (Tenerife, Spain) starting from 2022. The array will observe in the 0.5-200 TeV range with an angular resolution of a few arc-minutes and an energy resolution of about 10%. In the first four operational years the ASTRI Collaboration has developed a core-science programme focused on a limited number of key science targets. Additionally, thanks to a field-of-view of about 6 degree radius, ASTRI-MA will collect data from many other field sources that will constitute the base of a long-term Galactic observatory programme.

Aims

In this contribution, I will focus on the observational science that will significantly extend the number of objects studied within the core-science programme. I'll show for each category of astrophysical VHE class a benchmark example to highlight the expected performance of the ASTRI Mini-Array.

Methods

Detailed simulations have been performed by means of the most up-to- date ASTRI Mini-Array instrument response function for the field sources: the SNR IC 433, the PWN HESS J1813-178, the gamma-ray binary LS 5039, the micro-quasar SS 443, the globular cluster Terzan 5, the gamma-ray binary/PWN TeV J2032-431.

Results

We compared the expected performance of the ASTRI-MA with the most recent results from literature for each simulated source. We always found that for the expected deep exposures (50-200 hours) foreseen in the Core-Science programme targets, significant improvements *at the same time* are obtained for field sources up to 3 deg offset angle.